

F. W. REYNOLDS & CO.  
Illustrated Catalogue  
OF  
BUILDERS'  
MACHINERY  
AND  
APPLIANCES.

AUGUST,



1876.



# F. W. REYNOLDS & CO.

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## Discount List to Trade only.

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1st May, 1875.

15 per cent. on all Machines and Appliances in F. W. R. & Co.'s Catalogue, issued May, 1875, except:—

Circular Saws	45 per cent.
Band Saws	20
Band Sawing Tables, Shafting, &c., Mounted Grindstones, Barrows,	
and Pumps	10
Engines and Boilers, Lever Punching Bears, Carts	5
Stone Sawing and Polishing Machines, Warehouse Lifts and Cranes, Pile Drivers, Portable Coppers, Safes	Special quotations

73, Southwark Street, and The Grove, London, S.E.

*Country House Terms*

*2½% Cash or*

*1 year credit and*

**PROPERTY OF  
SCIENCE MUSEUM**

SUPPLEMENT  
TO  
F. W. REYNOLDS & CO.'S  
Illustrated Catalogue  
OF  
WOOD WORKING  
AND OTHER  
BUILDERS' MACHINERY  
AND  
APPLIANCES.

AUGUST,



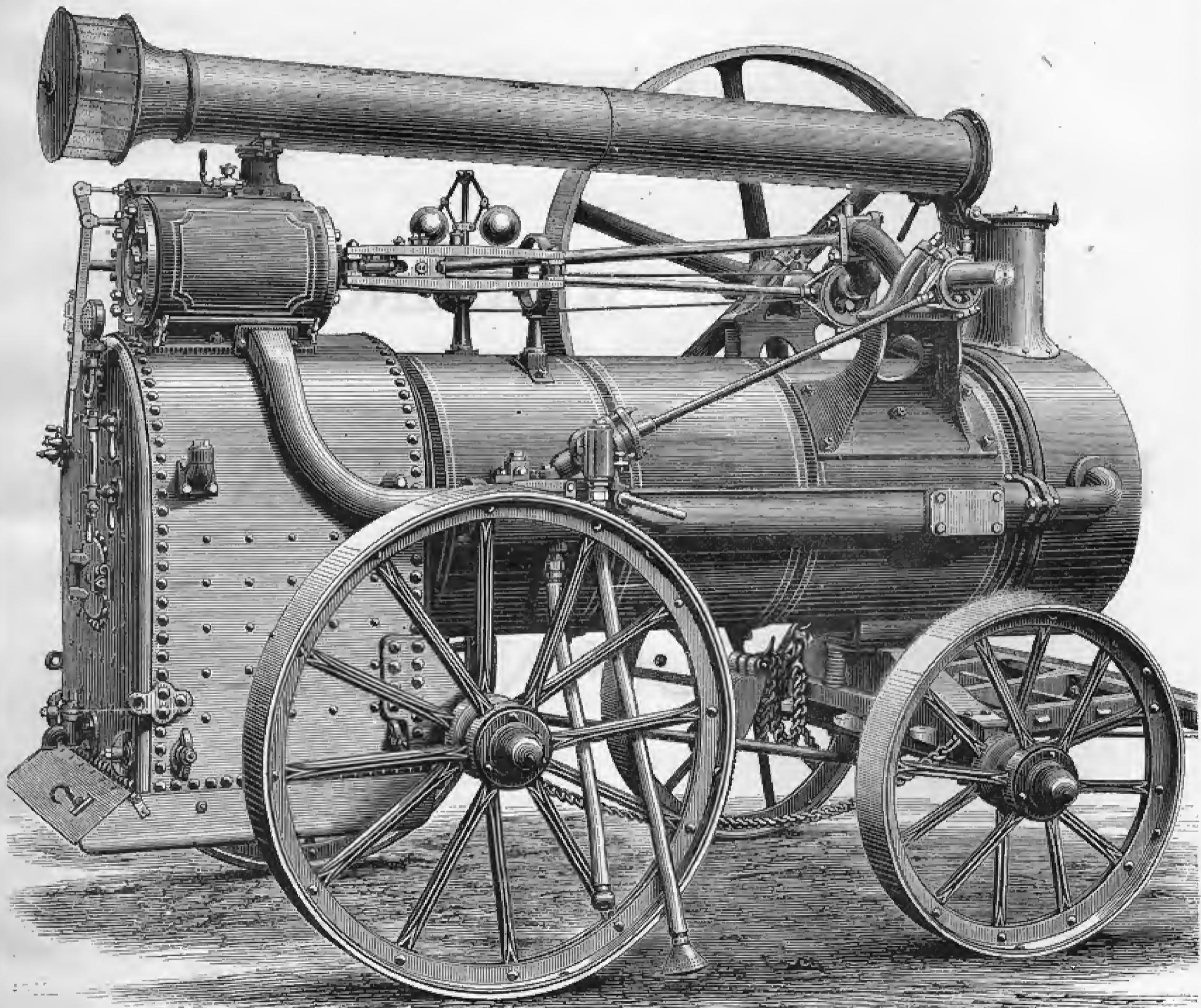
1876.

73, SOUTHWARK STREET, AND THE GROVE,  
LONDON, S.E.

## IMPROVED PORTABLE STEAM ENGINE

WITH

SINGLE CYLINDER, STEAM JACKETTED.



These Engines are suitable for driving Circular and Band Saws, Log Saw Frames, and other Wood-working Machinery ; Mortar and Loam Mills ; Grinding and Crushing Mills ; Centrifugal and other Pumps ; and for the various purposes of Contractors, Builders, and Agriculturists.

Full description and prices on opposite page.

73, Southwark Street, and The Grove, London S.E,

## IMPROVED PORTABLE STEAM ENGINES.

The Illustration on opposite page represents one of the Standard Series of Portable Engines with Single Cylinder.

The Material and Workmanship used in their construction are throughout of the very first class, and the finish is unrivalled.

They embody all the latest improvements that in any way add to the durability and economical working of the Engine, special attention being paid to simplicity of construction and proper proportion of the various parts, which, as far as possible, are made so as to be easily accessible for examination, and each part being made to Template, duplicate wearing parts of Brasses, or any part of the Engine, can be procured at once.

Special attention is called to the following advantages of these Engines, which make them unequalled for efficiency, strength, and durability :—

**ECONOMY OF FUEL.**—The Cylinders are Steam Jacketted, an improved Feed-water Heating Apparatus, in connection with the Exhaust, heating the Supply to a high temperature. Every Engine is fitted with Patent Variable Expansion Eccentric.

**SIZE OF CYLINDER.**—The diameters of these are, as will be seen below, of very large area. They are cast of specially mixed iron, of the very best quality, and are, as already mentioned, Steam Jacketted.

The Boiler is extra strong, and has a very large proportionate amount of heating surface, and is tested to double the working pressure. The Tubes are inserted on an improved method, making them very durable, and decreasing the liability to leakage. The Engine is supplied with a Newly Patented Steam Blast Tube Cleaner, and by the simple movement of a handle, a powerful blast of steam is introduced into the chimney, instantly withdrawing from the Tubes all soot and other obstructions, and thus, at once, obviating the dirty and disagreeable operation of sweeping by the ordinary tube brush. The Tubes can, by this arrangement, be cleaned, as often as necessary, whilst the Engine is at work, thereby effecting a great saving of fuel, and increased production of steam.

The Fire Box is made exclusively of the best Lowmoor Iron, and well stayed throughout. It can be made specially large for burning wood, straw, or refuse, at a small additional charge. A Spark Arrester is attached to the Chimney.

The Governor is of the most improved design, simple and compact. It is exceedingly sensitive, and when driven at a high speed keeps the Engine under perfect control, ensuring perfect regularity of speed, and prevents its racing.

[OVER.]

The Feed Pump is very efficient, being continuous, certain in action, and not liable to get out of order, thereby avoiding the serious delays which often occur with the ordinary pump. The large sizes are furnished with Patent Feed-water Heater, by which a great saving of Fuel and Water is effected, as well as a reduction in the wear-and-tear.

The Piston is of Steel, as are also the Valve Rods and Slide Bars. Wrought Iron and Steel is introduced wherever practicable. Large wearing surface is provided in all the Brasses and Bearings throughout the Engine, and all Lubricator Boxes are worked out of the solid material.

A simple and efficient Reversing Motion is attached, so that the Engine may be changed to run either way, as required, in a few minutes. If instantaneous reversing is required for Winding, Pumping, or other purposes, the Engine can be fitted with Link Motion Reversing Gear, at a small extra charge.

The Engine may be had either with Wooden or Wrought-iron Travelling Wheels, as desired, at same price.

Every Engine is thoroughly tested before leaving the Works, and is fitted and supplied complete with Steam Pressure Guage, Safety Valve, and Spring Balance, Second Safety Valve (Lock-up) Spanners, Firing Tools, Tunnel, Tube, Brush, Oil Feeder, and Waterproof Cover, and is furnished with Cheek Chains, Lock Chains, Shafts, and Skid Pan.

Horse Power.	Diameter of Cylinder in inches.	Length of Stroke in inches.	Diameter of Flywheel in inches.	Revolutions per minute.	Weight in cwts.	Cubic Measurement in feet.	Price.
2½	5½	8	42	180	30	140	£115
3	5½	9	48	150	42	200	125
3½	6	9	48	150	45	220	140
4	6	10	56	130	57	260	160
5	7½	12	60	130	62	300	180
6	8½	12	60	120	72	350	200
7	9	14	66	110	85	380	215
8	9½	14	66	110	88	410	220
9	10	14	66	100	93	440	250
10	10½	14	66	110	97	490	270
12	12	14	66	110	110	520	310
With double cylinders	10	7½	11	60	120	103	492
	12	8½	12	60	120	112	525
	14	9	60	120	125	535	575
	16	9½	66	110	147	560	415
	20	10½	66	110	210	635	495

All Engines above 3½ Horse Power are supplied with the Patent Feed-water Heater.

Link Motion Reversing Gear, £15 extra; to the Double Cylinder Engines, £20 extra.

The Shipping Weights and Measurements are approximate only, and must not be taken as absolute.

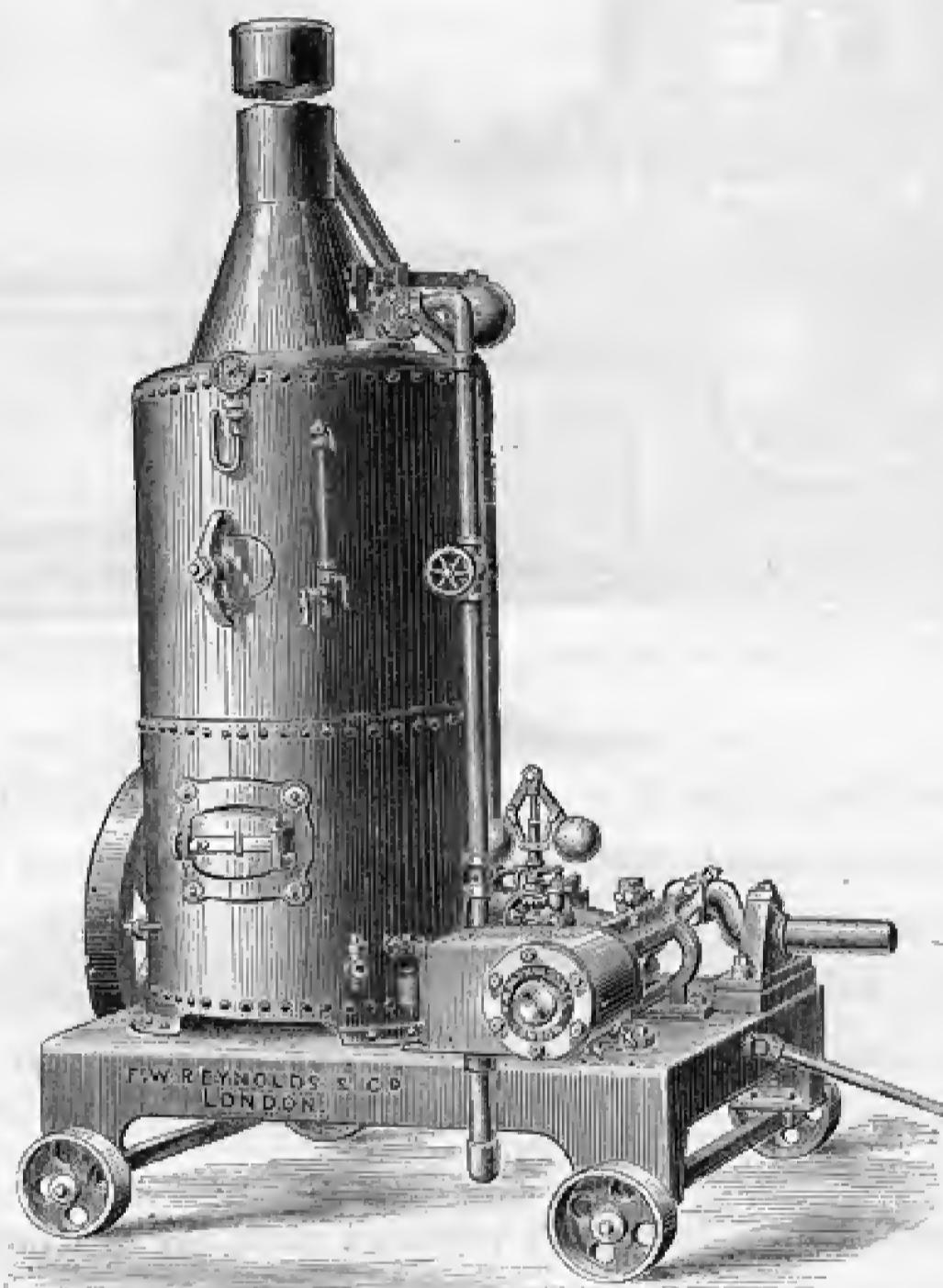
Cost of packing for Sea Voyages can be had on Application.

# IMPROVED HORIZONTAL HIGH PRESSURE EXPANSIVE STEAM ENGINE, WITH VERTICAL BOILER.

This Engine is complete in itself, and with its Bed-plate is entirely independent of the Boiler, which prevents all injury thereto from the strain of working ; and the Engine is also uninfluenced by the contraction and expansion so much complained of in Engines having the Cylinder and other parts affixed to the Boiler. Moreover, it is very compact, and lies low, thus avoiding the top-heavy shaking strains to which all Engines of the Vertical kind are more or less liable. And in the event of the Boiler requiring repairs or renewal at any time, the work can be effected at much less cost, and with greater ease and facility.

The Cylinder is covered, to prevent condensation of steam. The Fly Wheel is turned bright to receive strap, and the Crank Shaft is so arranged that additional Driving Pulleys may be fixed either inside or outside of the Fly Wheel.

A Feed Pump with gun-metal working parts is fixed to the Bedplate of the Engine. Gun-metal and Steel are freely



used throughout, and the Engines are finished off bright.

The Governor is exceedingly simple and compact, and at the same time very sensitive ; the working of the Engine under varying pressures of Steam, &c., under sudden differences of load being rendered regular and uniform.

The Boiler is made of best materials, and is fitted with simple cross tubes, affording increased heating surface, without the risk and annoyance of choking up from sediment or incrustation.

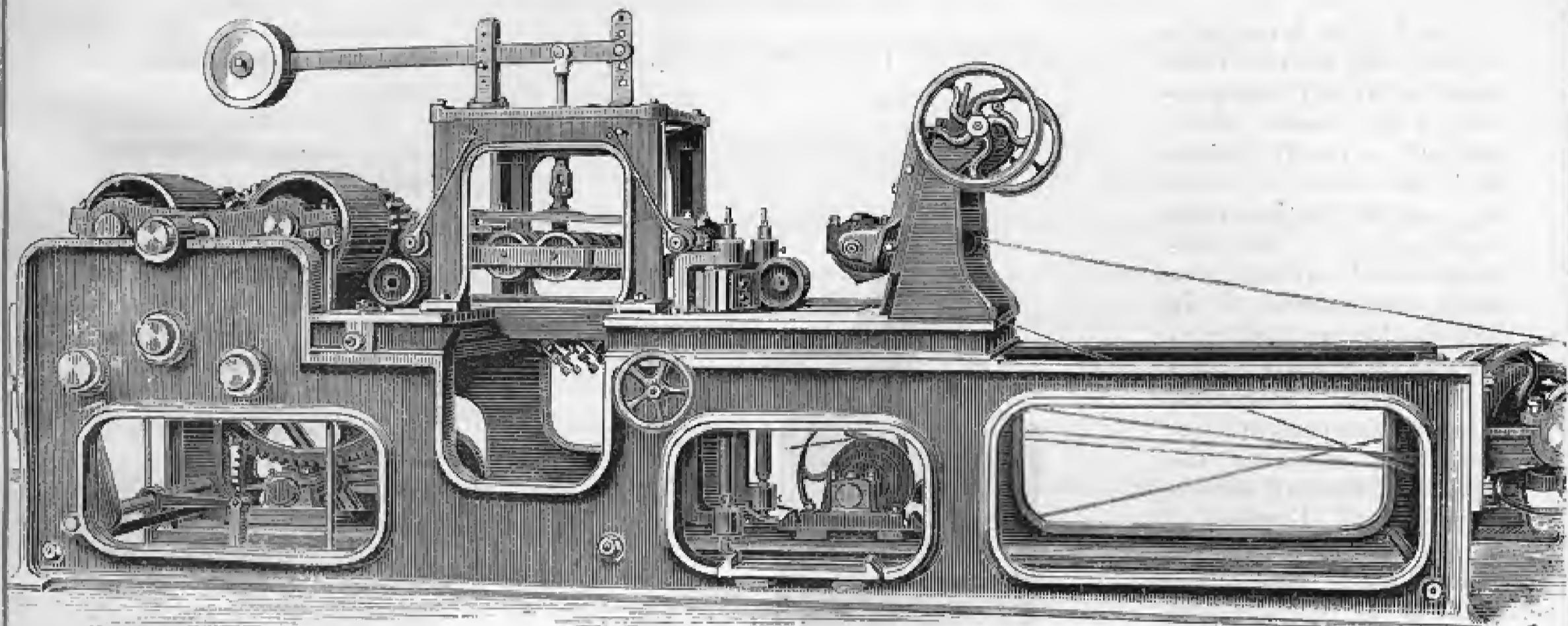
The Fire Box is sufficiently large for burning wood and other kinds of fuel.

Every Boiler is supplied with all the requisite fittings, ready for work immediately on arriving at its destination.

This Engine and Boiler is particularly well suited for shipment abroad, as the whole can be packed in a very small space, and on arriving at its destination, can be erected in very little time, and without the employment of skilled labour.

NOMINAL Horse-POWER . . . . .	2	3	4	5	6	8	10	12
Indicated Horse-power at 50 lbs. pressure in Boiler, speed 240 feet per minute, cut off at half stroke . . . . .	4·	6·9	9·6	12·8	15·5	20·6	24·	27·
Price of Engine and Boiler complete . . . . .	£58	£86	£105	£125	£144	£176	£214	£265
If Mounted on Wheels and Axles, extra . . . . .	3	4	5	5	6	6	8	10
Diameter of Steam Cylinder . . . . .	4½ in.	5½ in.	6½ in.	7½ in.	8½ in.	9½ in.	10½ in.	12½ in.
Length of Stroke . . . . .	8 in.	8 in.	12 in.	12 in.	12 in.	14 in.	14 in.	16 in.
Revolutions per minute . . . . .	180	180	120	120	120	103	103	90
Approximate total weight . . . . .	25 cwt.	35 cwt.	45 cwt.	56 cwt.	64 cwt.	75 cwt.	86 cwt.	97 cwt.
Diameter of Fly Wheel . . . . .	2 ft. 6 in.	2 ft. 6 in.	3 ft.	4 ft.	4 ft. 6 in.	5 ft.	5 ft. 6 in.	6 ft.

## MACHINE FOR PLANING, MOULDING, JOINTING, TONGUEING, AND GROOVING.



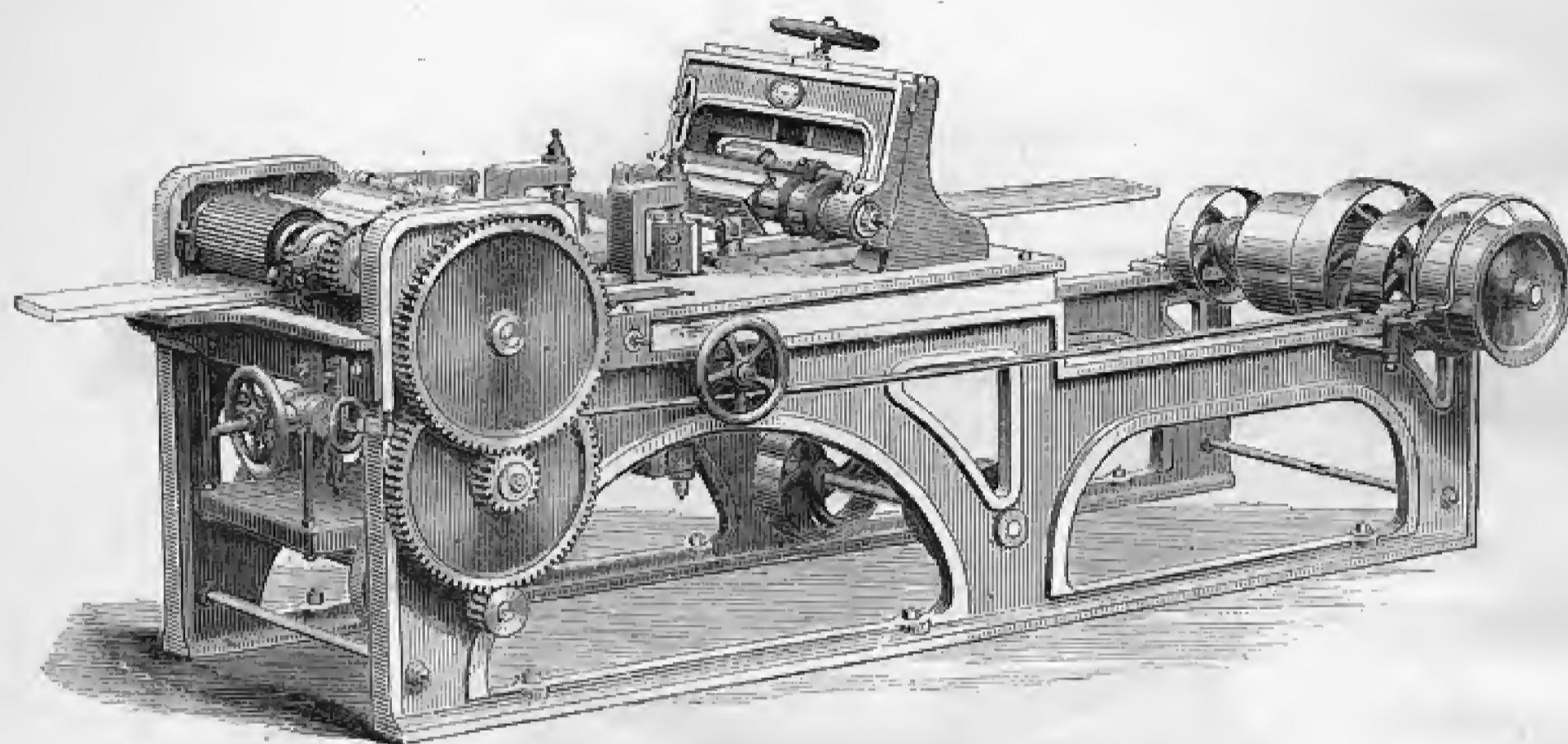
The Machine illustrated above is one of the most complete specimens of Wood-working Machinery that has been introduced. It will plane, mould, joint, tongue and groove, rebate, and reduce to any thickness all kinds of timber; and all of these processes can be executed, either singly or simultaneously, at one operation. For Floor and Match Boarding, Skirting Boards, Deck Planks, &c., it is especially suitable, turning out a large amount of work in less time than any other machine of the kind, and quite ready for use without requiring to be finished off by hand.

The Revolving Cutters, which are made to run at a very high speed, are so arranged that the timber may be planed and moulded on all four sides at the same time. The under side, however, is planed by Stationary Irons, which can be readily taken out for sharpening. The rough surface of the timber is taken off by Revolving Cutters before reaching the Stationary Irons. The Feed Motion consists of Four Calendar Rollers, so arranged that the top ones may be raised or lowered by means of a Hand Wheel and Screw, to suit any thickness of timber.

No. 1.—To take timber up to 12 in. by 4 in.; average power required, 4-horse; approximate weight, 4½ tons. Price, £190.

No. 2.—To take timber up to 15 in. by 5 in.; average power required, 5-horse; approximate weight, 6 tons. Price, £275.

## IMPROVED MOULDING AND PLANING MACHINE.



The above Illustration represents one of F. W. REYNOLDS & Co.'s Improved Moulding and Planing Machines.

This Machine is fitted with top, bottom, and two side Revolving Cutters, so that the timber may be moulded or planed on all four sides simultaneously.

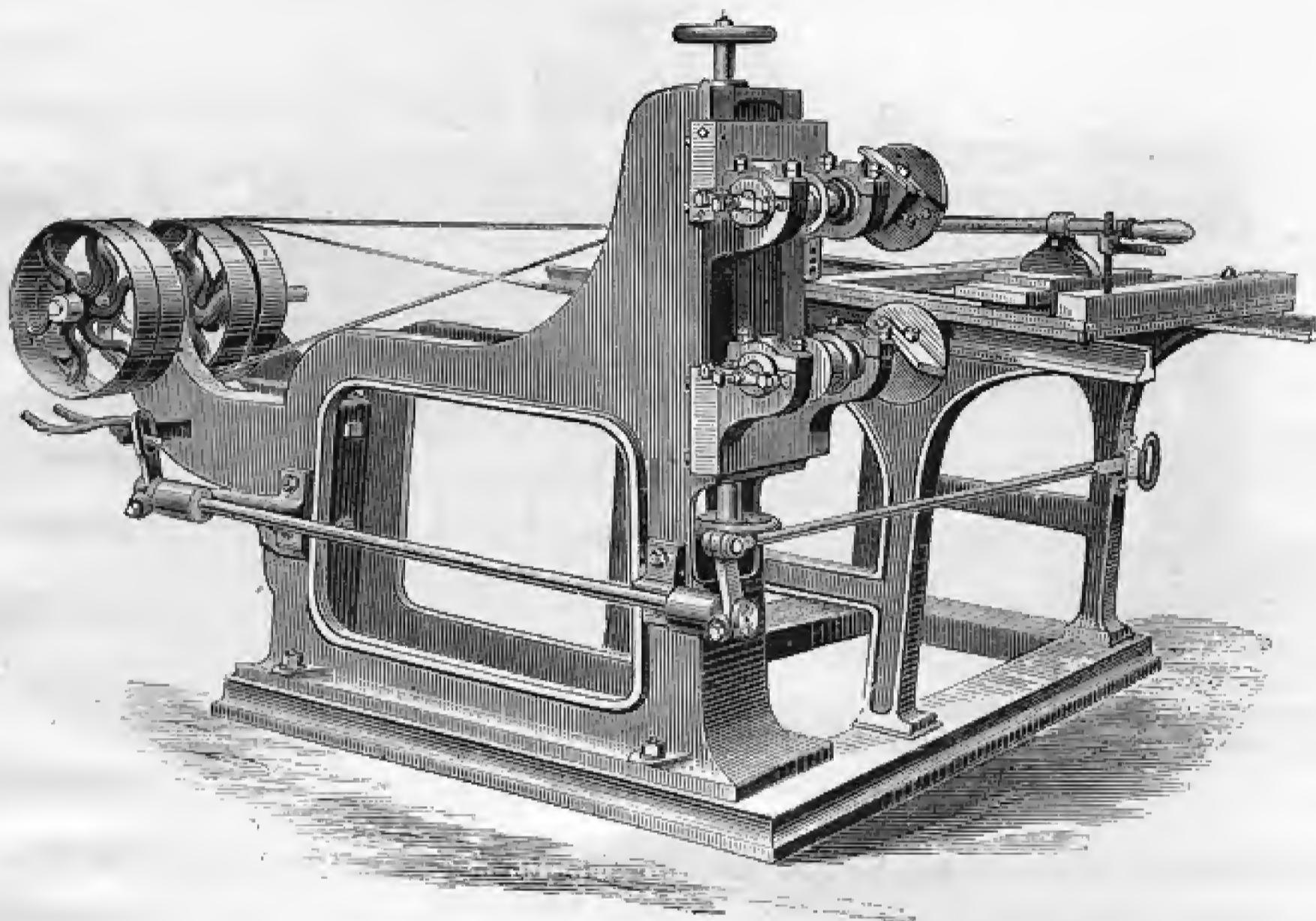
For planing boards, Plane Cutters are fixed in the top and bottom blocks, which are made to revolve at the highest possible speed. Suitable Cutters are provided for fixing to the side-heads, or blocks, so that the edges may be placed, or tongued and grooved at one operation.

The Feed Motion consists of four Calendar or Grooved Rollers, to which motion is given by direct Toothed Gear, and which rise and fall in Curved Guides, struck from the centre of the Wheel by which they are driven. By this arrangement the Wheels always work in gear, and allow timber of any thickness up to 12 in. by 4 in. to be passed through. This Feed Motion is regular and certain, and brings the timber to be planed steadily forward, without jerking or slipping.

With this machine Boards can be planed and Mouldings done at the rate of from 10 ft. to 30 ft. per minute.

	Average Power required.	Weight.	Price.
Machine Planing or Moulding, 12 in. by 4 in. ...	4-horse 3-horse	2½ Tons	£150
" " 9 in. " 4 in. "		2½ "	130

## IMPROVED TENONING MACHINE.



This Machine is particularly suitable for Builders, Carpenters, Joiners, Cabinetmakers, Agricultural and other Machine Makers, and possesses most of the advantages of the more costly Machines. It has been constructed on an entirely new design, and where it is already in use is giving much satisfaction.

It will cut double or single Tenons up to  $3\frac{1}{2}$  inches long, and scribe the Shoulders at one operation ; but by re-passing the timber between the Cutters, any length of timber may be cut.

The Cutter is driven by separate Belts, so that they can be used either separately or together. The Cutter Block Spindles are carried on mitre-grooved Slides, and by the hand wheels at top or bottom can be raised or lowered to suit various depth of tenons required to be cut, and either Cutter can be adjusted on its spindle for cutting tenons with unequal shoulders. Flat Cutters are supplied, being more easily kept in order, and working as perfectly as if curvilinear.

Each Cutter Block is fitted with Shouldering Irons, so as to make a perfectly clean shoulder.

For forming double Tenons there is a disc or Drunken Saw mounted on a Vertical Spindle, and also a Disc fitted with Cutters for scribing the shoulders.

The framework of the Machine is very strong throughout ; the sliding table which carries the timber, being tenoned, runs freely upon turned friction-pulleys working in planed guides, and the wood is held securely against the fence by a Hand Lever or Cramp, which can be instantaneously fixed or released.

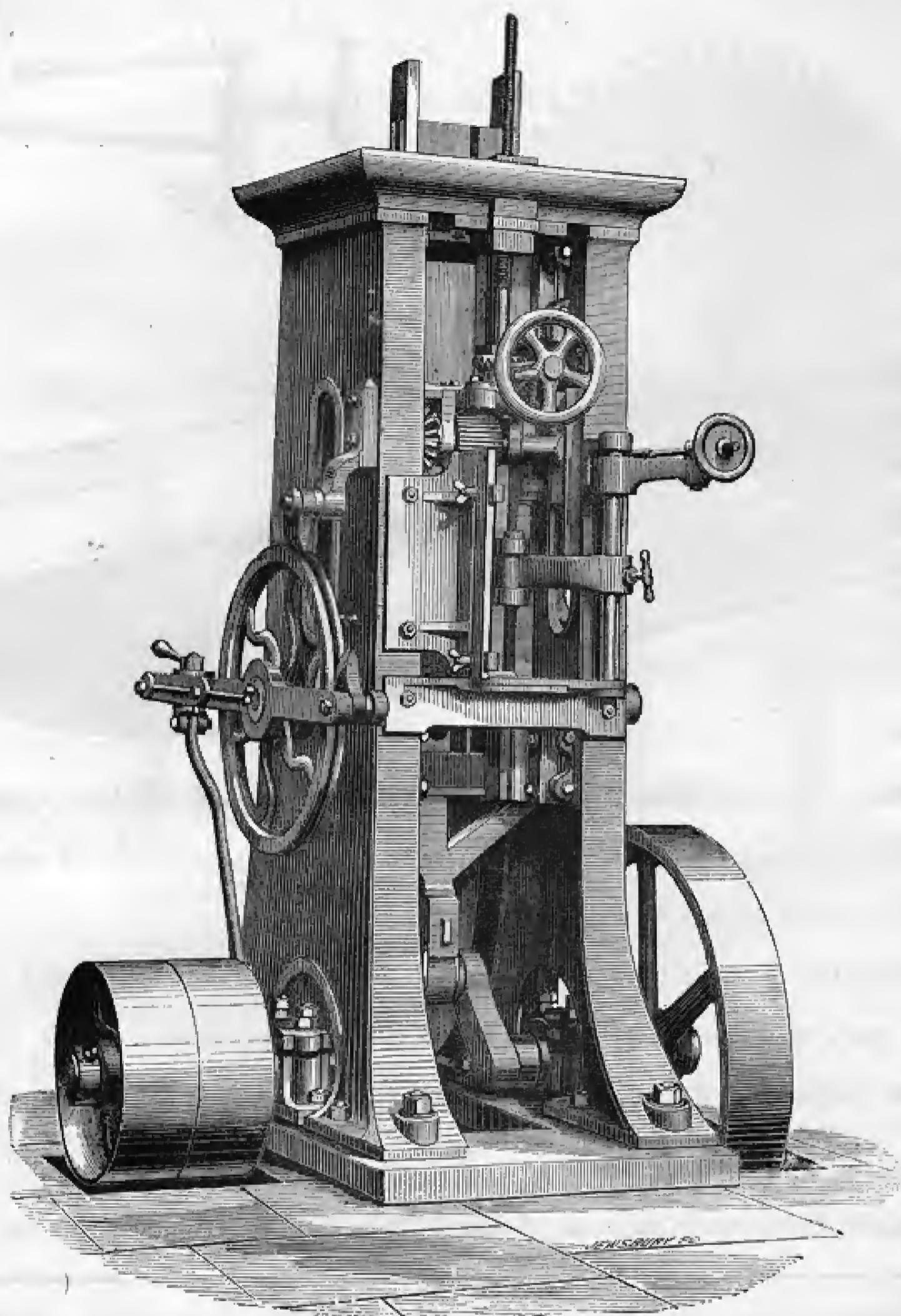
The Table is fitted with adjustable Spring Stops, which can be set to suit various lengths, thus saving the workman's time in setting out the stuff to be tenoned.

The Machine is firmly mounted on an extra strong Bedplate, and, as will be seen from the above Illustration, is perfectly self-contained.

The average power required is  $\frac{1}{2}$  a horse. Approximate weight, 14 cwt.

Price, with two Cutters, complete	..	..	..	..	£46
„ with Vertical Spindle and Drunken Saw for Double Tenons	..	..	..	..	£52

## PORTABLE SINGLE DEAL FRAMES.



The Frame illustrated above stands on its own foundation, and is entirely self-contained. It is fixed on a level with the floor, and avoids the necessity of underground foundations and deep excavations. It will cut deals of any size up to 20 in. by 6 in., and is fitted with strong Web-crank, forked Connecting Rod, and top and bottom Feed Rollers, driven by direct gearing. Four pillars and rollers for carrying deals to and from the saws are supplied, and the frame is fitted with a Patent Silent Feed Motion. The swing-frame is constructed of wrought-iron and steel, which, combining great strength with comparative lightness, enables it to be driven at a high velocity.

Will take Deal 20 in. by 6 in.

Will carry 11 Saws.

Power Required.

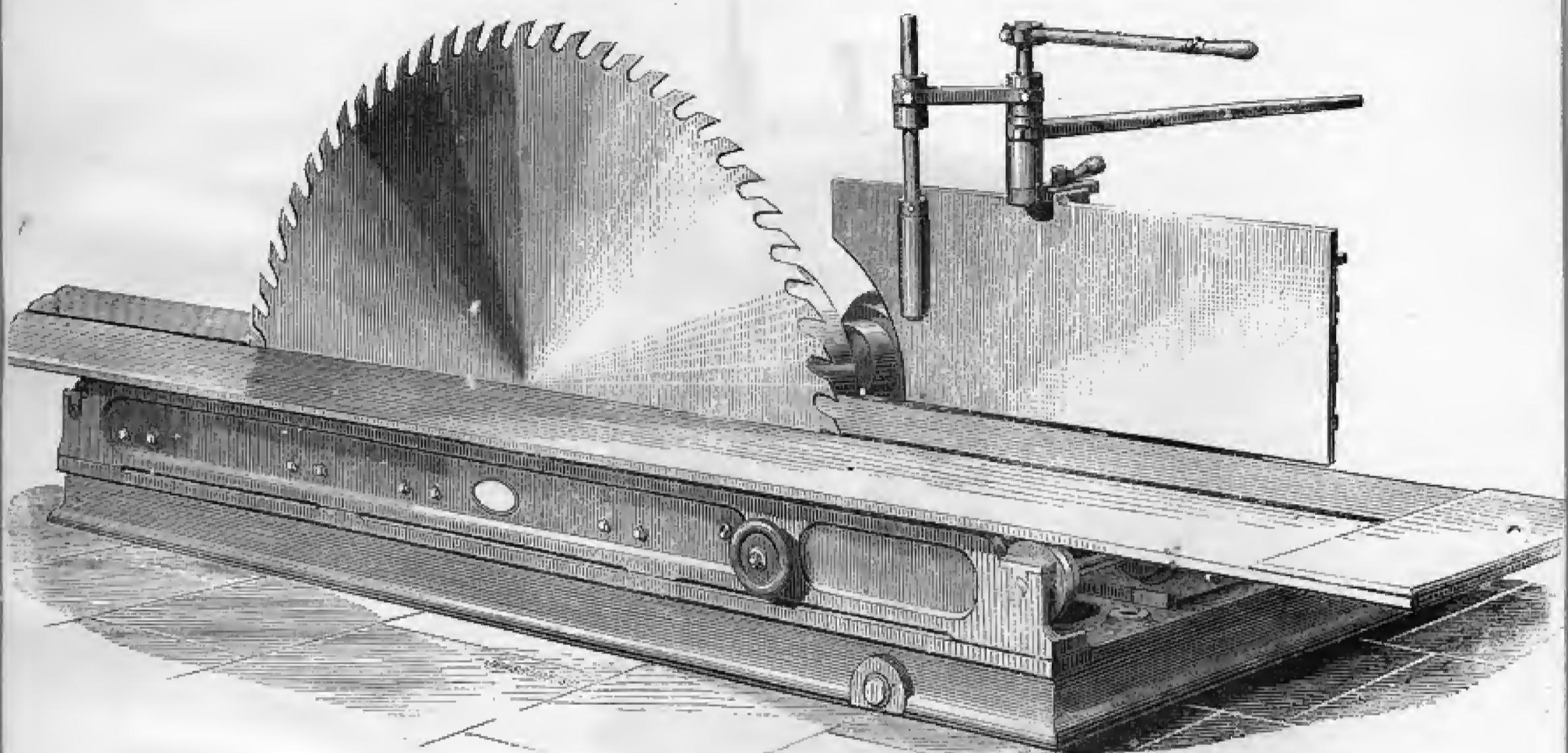
2-Horse.

Weight.

$2\frac{1}{2}$  Tons.

Price, £105.

## IMPROVED RACK CIRCULAR SAW BENCH.



The Rack Bench illustrated above is a very powerful machine, and has been specially adapted for cutting up trees, logs of irregular timber for joists, rafters, and other scantlings, and for many purposes where a Vertical Saw Frame cannot be used with advantage.

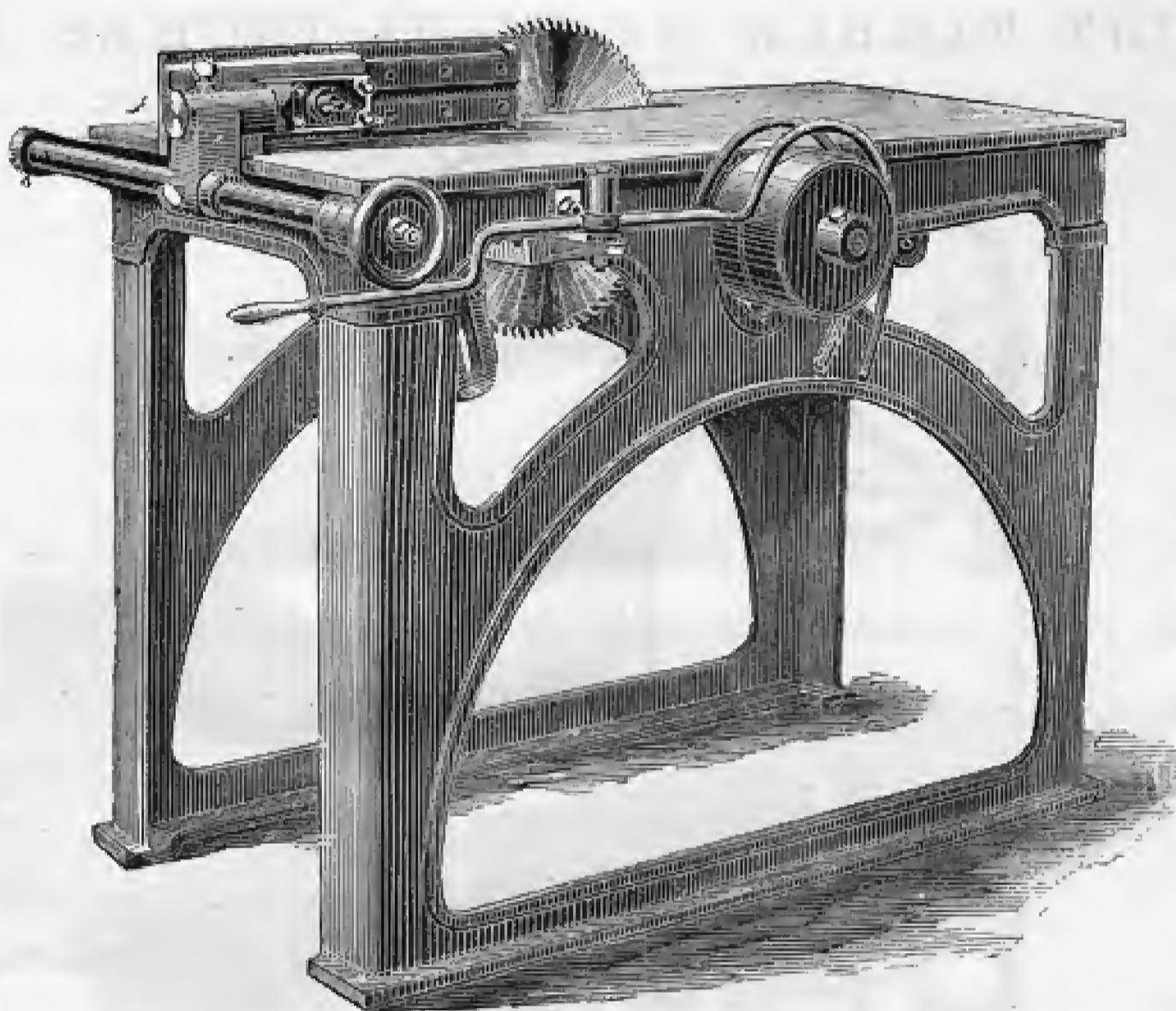
The Travelling Bed is made of wrought-iron, planed and accurately fitting, and runs upon turned rollers, 2 ft. 9 in. apart, at a rate varying from 12 to 40 feet per minute. It is fitted with Quick Return Motion and Adjustable Fence, with Pressure Lever and Roller for keeping the Timber up to Fence.

Prices include 12 Rollers and Chairs for off-side of Table, and One Counter Shaft for Driving Saw.

	To Take a	To cut	Length of Travelling Bed.	Weight.	Power required.	Diameter of Driving Pulleys.	Price.
No. 1.	72-in. saw.	32 in. deep.	50 ft.	10 tons.	10-horse.	24 in.	£300.
No. 2.	60-in. ,,	26 ,,	40 ,,	8 ,,	8 ,,	20 ,,	£240.
No. 3.	42-in. ,,	18 ,,	25 ,,	3 $\frac{3}{4}$ ,,	4 ,,	18 ,,	£130.

Extra Lengths of Travelling Bed, with necessary Rollers and Chains, supplied as required.

IMPROVED STEAM POWER "No. 1" CIRCULAR  
SAWING MACHINE.  
TO CUT SIX INCHES DEEP.



The Frame of this Machine is exceedingly strong, both in form and substance, and stands firm and steady. The surface, which is 4 ft. by 2 ft., is planed perfectly true, the Spindle works in long Brass Bearings, and the Fence Plate may be set to any angle required for bevel-cutting. The Fence Plate is also made so as to turn over the end of the Bench, leaving the surface quite clear for cross-cutting, and is fitted with a five-screw adjustment.

The Spindle is made to rise and fall, so that the Machine may be used for Tenoning, Grooving, and Rebating.

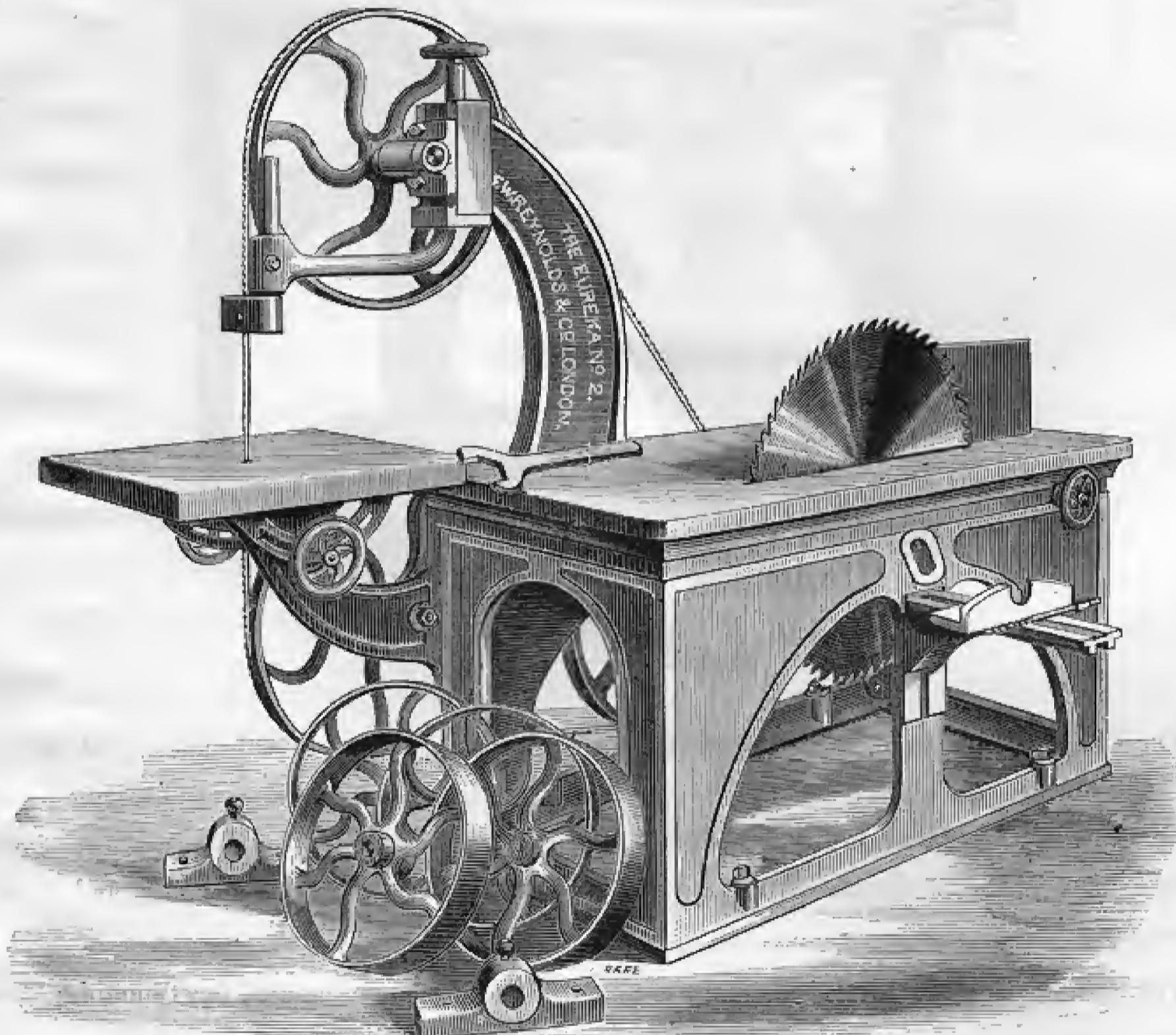
The Machine is supplied with a Strap Guide, by means of which the power can be released or applied with great facility.

Price, with 18-in. Saw	..	..	..	..	£15 15
,, with Rising and Falling Spindle and Extra Saw, 9 in.	..	..	..	..	£18 10

THE "EUREKA" (Registered) COMBINED CIRCULAR  
AND BAND SAW SAWING MACHINE.

No. 2.

WILL CUT TIMBER UP TO 11 INCHES THICK.



Price, complete, with Boring Apparatus, Countershaft (with Two Sets of Driving Pulleys), Striking Gear, Spanners, Saws, and Auger, £60.

For full description see opposite page.

## THE "EUREKA" (Registered) COMBINED CIRCULAR AND BAND SAW SAWING MACHINE.

The favourable reception which the smaller Machine of this pattern met with on its introduction, and the general satisfaction that has since followed, has induced F. W. R. & Co. to construct a similar machine for heavy work ; and they now confidently place it before the Trade in the reliance that its superior advantages of construction, strength, workmanship, and mountings, will procure it a place in every Workshop where a Machine of this kind is required, as, for general purposes, it is undoubtedly much more useful than any other.

The Machine is supplied with a Circular Saw, 30-in. diameter, and an Endless Band Saw, both of which will cut timber up to 11 inches thick.

The Circular Saw is mounted on an extra strong spindle, which can be raised or lowered by a Hand Screw, so that for Rebating, Tenoning, and Grooving, the Saw may be adjusted to any required height with the nicest accuracy.

The Fence Plate can be adjusted to any required angle for bevel-sawing, feathering boards, &c., and is provided with both a coarse and fine adjustment.

The Circular Saw and the Band Saw may be used either separately or simultaneously.

The tension of the Band Saw is regulated by a Hand Screw, which raises or lowers the upper pulley, as may be necessary, and the Band Saw Guide is furnished with a running pulley, which reduces the friction to a minimum. The Band Saw Table is held in position by two quadrants, allowing it to be canted for bevel cutting.

The Boring Apparatus is on the same side as the Circular Saw, and consists of an auger fixed firmly by a set screw into a socket at the end of the saw spindle. It can be adjusted to any required height, and is furnished with adjustable receptacle for wood of various thicknesses.

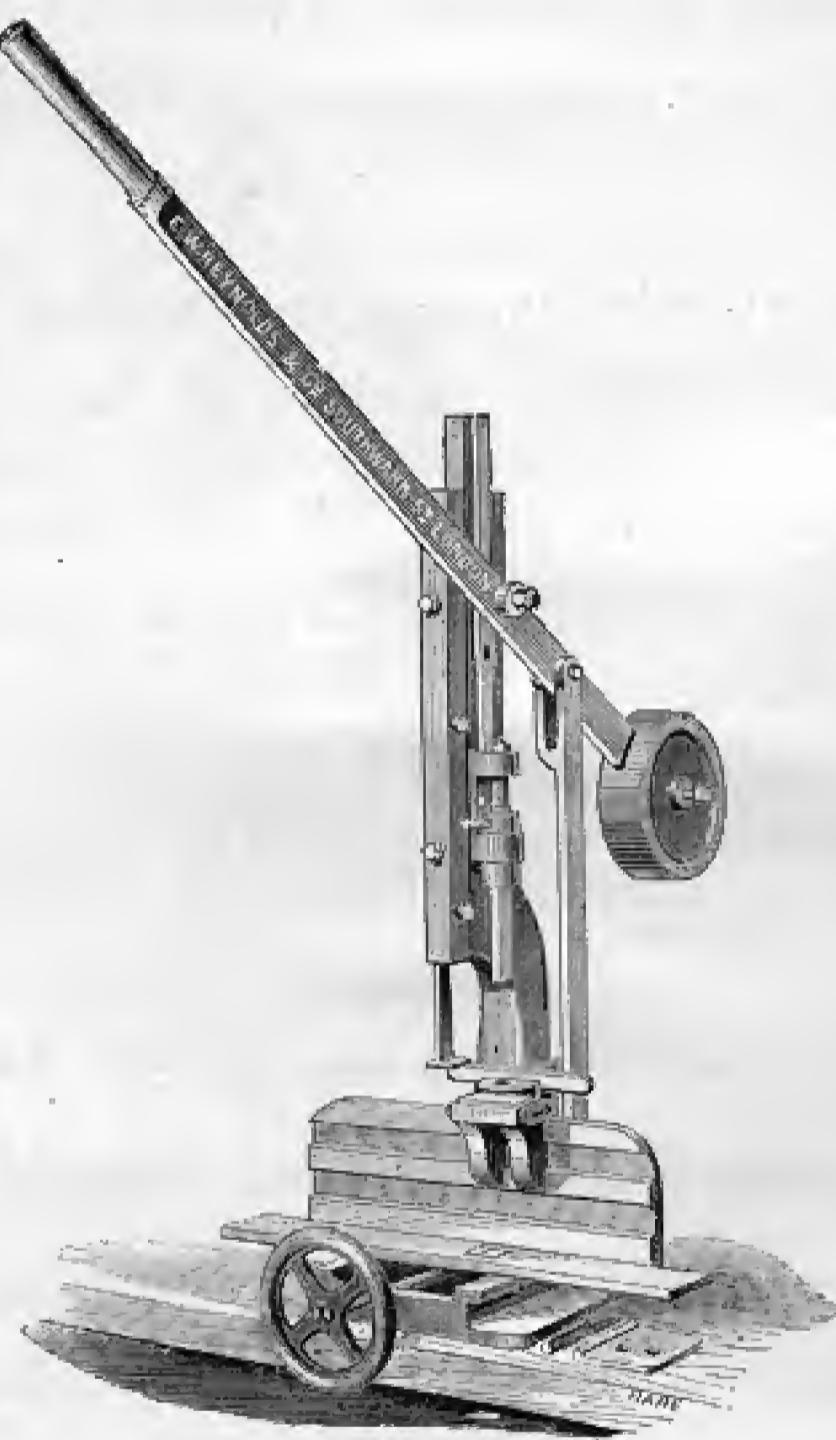
The Machine is made specially strong, the frame being a very heavy casting. It is well-fitted throughout, and all the working surfaces are planed truly.

THE "PEERLESS" COMBINED JOINERS' AND  
BLIND-MAKERS' MORTISING AND PUNCHING  
MACHINE.

(PHILLIPS'S PATENT).

PRICE  
COMPLETE,  
£7 7s.

WITH  
STRONG PILLAR  
STAND,  
£8 8s.

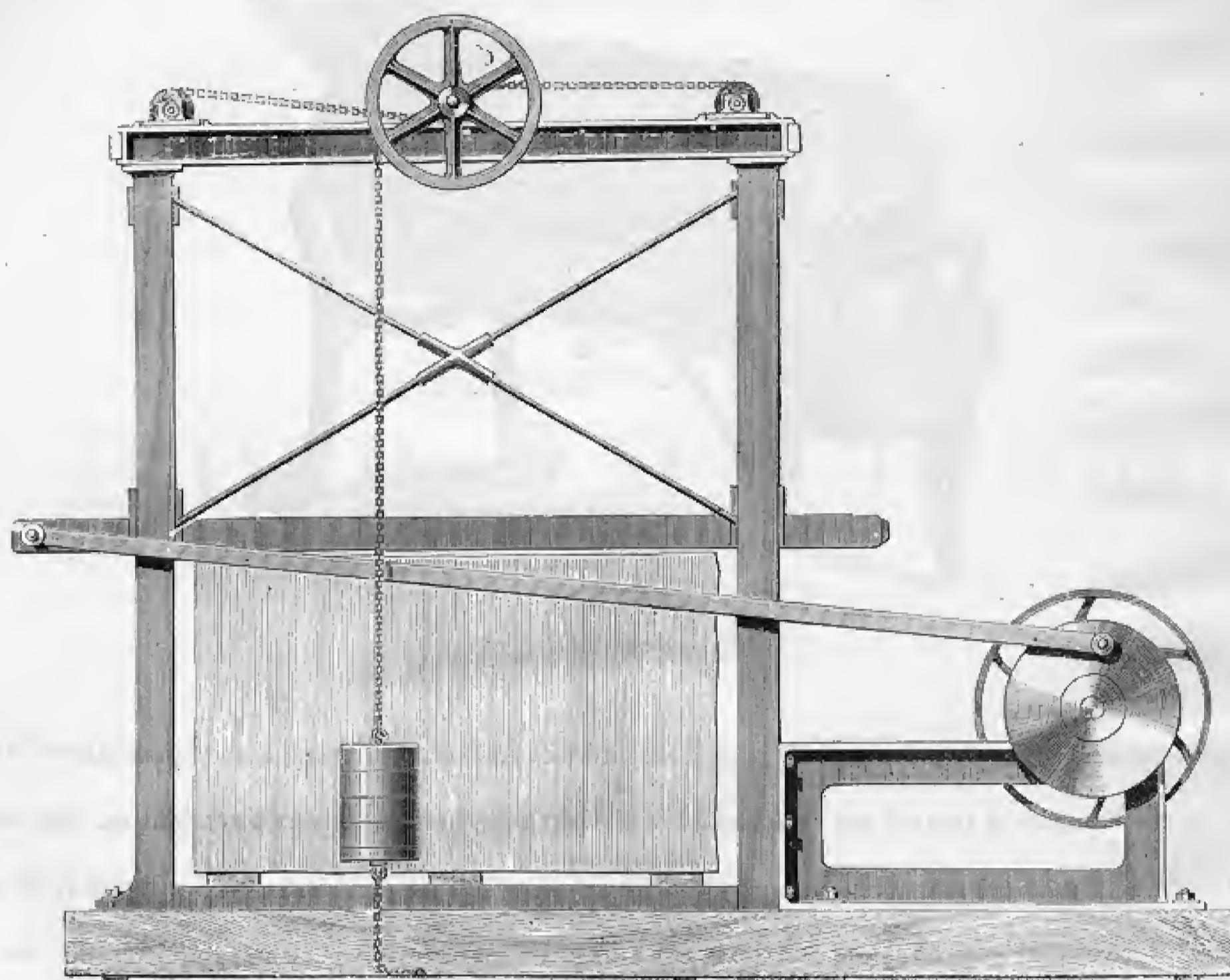


This Machine is supplied with Punch for making the Cord-holes in Venetian Blind Laths, patent Tools for Cutting, Canting, and Pulley Mortises in the Pulley Heads, and a complete set of Chisels for Mortising Shutter-frames, Door-styles, &c., from  $\frac{1}{4}$  to  $\frac{3}{4}$  by 9 in. deep.

It is constructed so that it may be set for different kinds of work very speedily, and being adapted for so many different purposes, recommends itself, not only to the Blind-maker, but to every Carpenter and Joiner, for the numberless jobs for which a small Machine of this kind is useful.

# IMPROVED MARBLE AND STONE SAWING MACHINE.

WITH IRON FRAMING.



This Machine is recommended to all Builders and Stone Merchants on account of its extreme simplicity, and the absence of complicated gearing.

It is very strongly made, all the framing being of iron, and will do more work and of better quality than any ordinary Sawing Frame.

The Saws can be arranged to cut the blocks into slabs of any thickness, from 1 in. upwards.

No expensive foundations are needed, this Machine being very firm and rigid.

In case of removal from one job to another, it will be found to possess great advantages, being readily taken to pieces and re-erected.

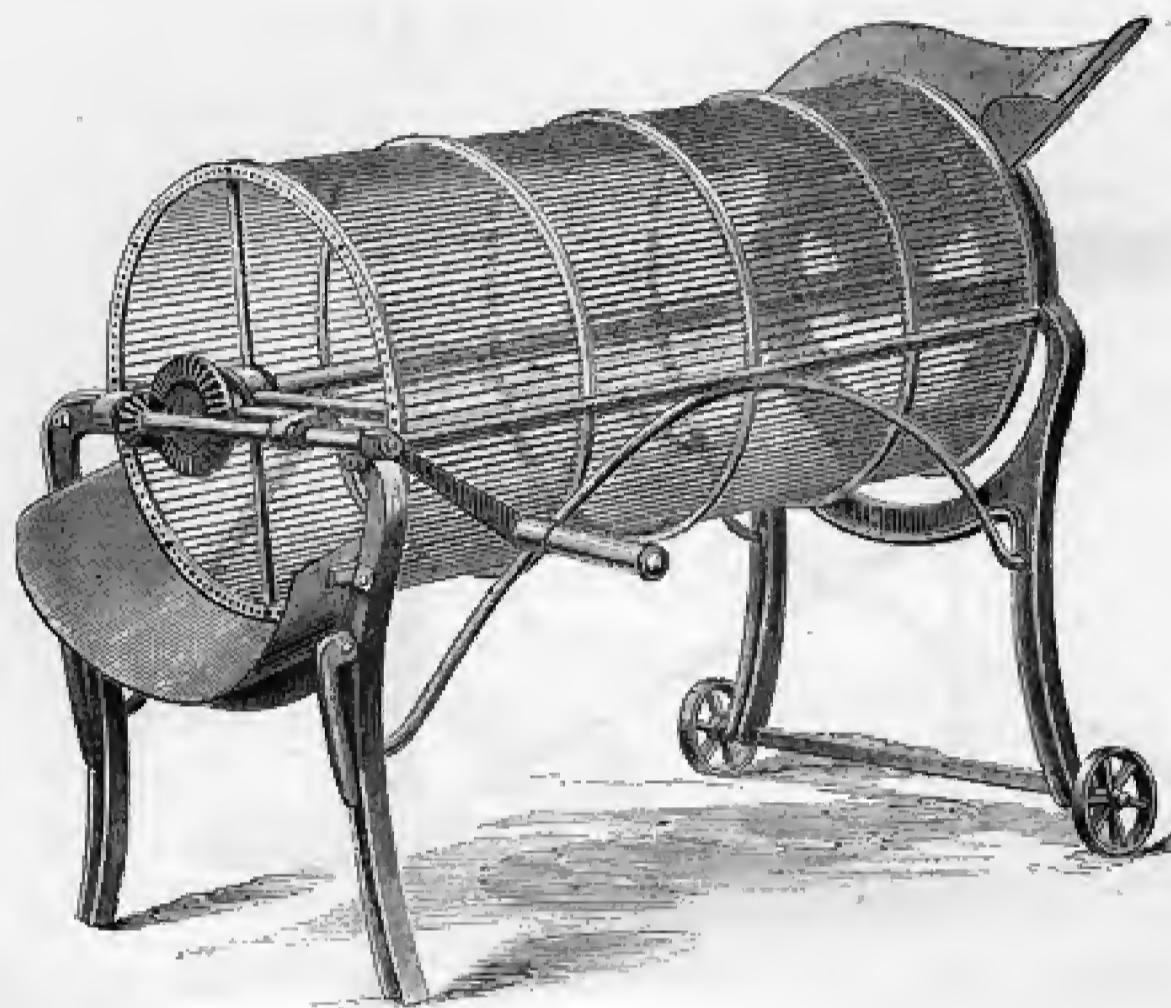
It can be driven by Belting from a Portable Engine, or from a Pulley on existing shafting.

				Average power required.	Price complete.
No. 1.	To Saw Block	4 ft. 6 in.	by	2 ft. 6 in.	by
				3 ft. 0 in. high	1 Horse £85
No. 2.	"	6 6	"	3 6	" 1½ "
No. 3.	"	7 6	"	4 6	" 2 "
No. 4.	"	9 6	"	6 6	" 5 6 " 2½ "
					178

Price includes Water-barrel and Tap.

Tillers and Cotters for holding Saws .. . 15s. per set.

## ROTARY GRAVEL SCREEN.



This Screen will be found especially useful to Builders and others having large quantities of Gravel to screen. A vast amount of Gravel can be screened with less than half the labour attendant on the use of an upright Screen. It can be managed perfectly well by a boy. The usual mesh is 5-16 in., and it is made so that every alternate rod may be taken out, thus enlarging the mesh to 7-8 in. when required for very coarse work. It is thoroughly well made, and can be recommended for strength and solidity.

4 ft. long by 2 ft. diameter.

Price	£8 8 0
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If with Beaters to revolve the reverse way to Screen for breaking lumps	£12 10 0
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Can be made any required mesh for special purposes.

F. W. REYNOLDS & CO.

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Illustrated Catalogue

OF

BUILDERS' MACHINERY

AND

APPLIANCES.

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MAY,



1875.

73, SOUTHWARK STREET, AND THE GROVE,  
LONDON, S.E.



LONDON :

Printed by WATSON & HAZELL, 28, Charles Street, Hatton Garden.

73, SOUTHWARK STREET, AND THE GROVE,

LONDON, S.E.,

*May, 1875.*

IN issuing a New Edition of their Catalogue of Builders' Machinery and Appliances, F. W. REYNOLDS & Co., beg to call attention to the many improvements that have been made in their various Wood Working and other Machines, and to the several new Machines now introduced.

The state of the Labour Market has rendered the employment of Labour Saving Machinery an absolute necessity, and in the Building Trade, perhaps, more than any other branch of industry. The want of Steam Power has hitherto prevented many Builders from availing themselves of the advantage of Machinery, but the high state of perfection to which F. W. R. & Co. have brought their Hand-Power Machines supplies the want.

The Imperial Circular Saw Bench, Mortising and Mitreing Machines have now been sufficiently long before the public for their advantages to be pretty generally known. They were exhibited at the International Exhibition, at the leading Agricultural Shows during 1874, and at the Smithfield Club Show ; and the opinions expressed by the Press at the time, which have been collected and inserted at the end of this Catalogue, are abundant testimony to their merits.

Numerous improvements have been introduced in the New Patent Mortising Machine, "The Monarch," and when its advantages are known, there is no doubt that it will be as generally appreciated as F. W. R. & Co.'s other Wood Working Machines.

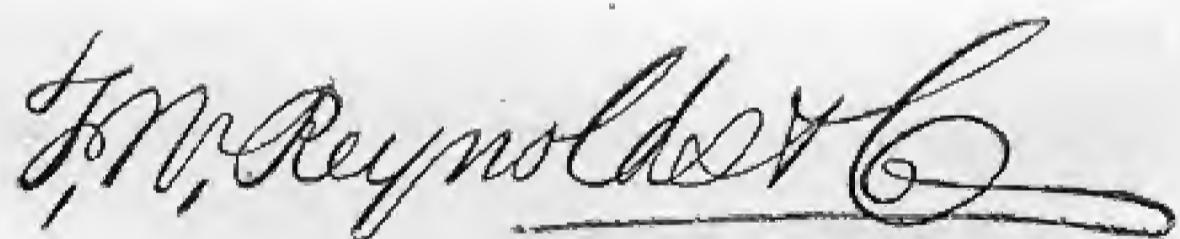
The New Patent Circular and Band Saw Sawing Machine, as shown on pages 6 and 7, combines all the advantages of a Circular Saw Bench, with the addition of a first-rate Band Saw ; and answers every purpose of a small General Joiner.

Special attention is directed to the London Mortar Mixing Mill, which is growing rapidly into favour among Builders and Contractors; and a number of which F. W. R. & Co. have recently had the honour of supplying to the Indian Department of Her Majesty's Government.

Several new Drilling and Blind Punching Machines, and Paint Grinding and Mixing Mills of improved construction are introduced, with full particulars of Cranes, Lifts, Crabs, and other Hoisting Gear. A new and very cheap Lifting Jack is added to the stock of patterns of these articles for which F. W. R. & Co. have for some time been noted; and they confidently recommend it as the best and cheapest thing made.

F. W. R. & Co. allow ONE MONTH'S TRIAL of any of their Wood Working Machines, Free of Charge, and in the event of their proving unsatisfactory, the only expense incurred is the cost of carriage to and fro. Where the cost of Machines precludes their immediate purchase, F. W. R. & Co. are willing to arrange easy terms on their new Hire System, by which the payment is extended over such a period as may be convenient.

To afford intending purchasers the opportunity of judging of their merit, at least one of each of F. W. R. & Co.'s Machines may always be seen finished and in operation, and their action and capabilities fully explained upon application.

A handwritten signature in cursive ink, reading "F.W. Reynolds & Co.", with a horizontal line underneath the name.

N.B.—IN PURCHASING THROUGH AGENTS SEE THAT F. W. REYNOLDS & CO.'S NAME  
IS CAST ON EACH MACHINE.

In all cases where a Ledger Account is not opened, References or a Remittance should accompany the order.

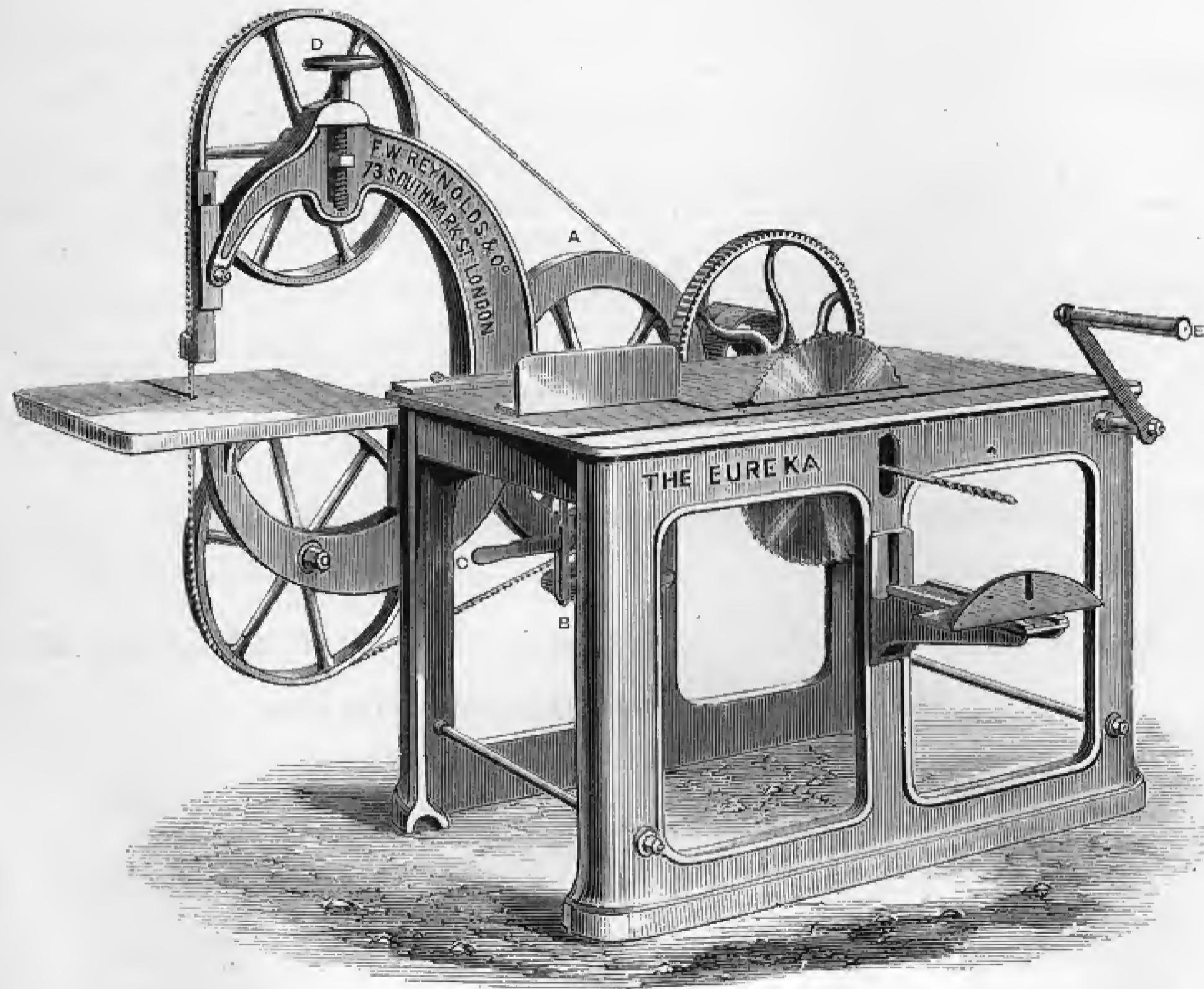
Cheques to be crossed "The Central Bank of London."

Post Office Orders to be made payable at Union Street, Southwark.

An extra charge of 5 per cent. is made on Shipping Orders to cover cost of packing, and in all cases where it is considered necessary to use Packing Cases.

Prices herein stated are Nett Cash at 73, Southwark Street.

THE "EUREKA" (Registered) COMBINED CIRCULAR  
AND BAND SAW SAWING MACHINE.



Price, complete with Saws . . . . . £24 0 0

Fast and Loose Pulleys for Steam Power, £1 extra.

Boring Apparatus, £3 extra.

## THE "EUREKA" (Registered) COMBINED CIRCULAR AND BAND SAW SAWING MACHINE.

This Machine, consisting of a strong iron Table, with a Circular Saw on the one side, and on the other a Band Saw, will cut, with either, timber up to 5 in. thick, and answers every purpose of a small general joiner.

A transverse Spindle below the centre of the Table bears a weighted Fly-Wheel, A, and the Circular Saw. For rebating, tenoning, and grooving, the Spindle, being raised or lowered by a Hand-Screw, B, may be adjusted to any required height with the nicest accuracy.

A self-acting feed-motion is communicated to the timber by means of a claw fastened to a rope, which, passing along the groove in the Table, is attached to a drum beneath. To this drum a slow rotary motion is given by means of an endless screw on the Spindle working into a cog above the drum. The man feeding may instantaneously throw this apparatus in and out of gear, by lowering or raising the Lever Handle, C, at his side. This will be found specially useful in sawing long lengths of timber.

The Band Saw apparatus is fixed on the opposite side, so that both Saws may be in use at the same time without interfering with each other. The Band Saw is made to pass over two pulleys, and the Fly-Wheel, A, thereby securing greater uniformity of tension and less liability to break than when passing over two pulleys only. The tension is regulated by a Hand-Screw, D, which elevates and depresses the upper pulley. The Table is held in position by a Quadrant, which allows it to be canted to any angle for bevel cutting. For sawing curves, such as window heads, for fret work, for coach builders, wheelwrights, cabinet and pattern makers' use, this Band Saw is eminently adapted.

On the same side as the Circular Saw is the Boring Apparatus. This consists of an auger fixed by a set screw into a socket at the end of the transverse spindle, of a rising and falling bed, and sliding fence plate for various dimensions of wood. This will often be found a useful and handy adjunct.

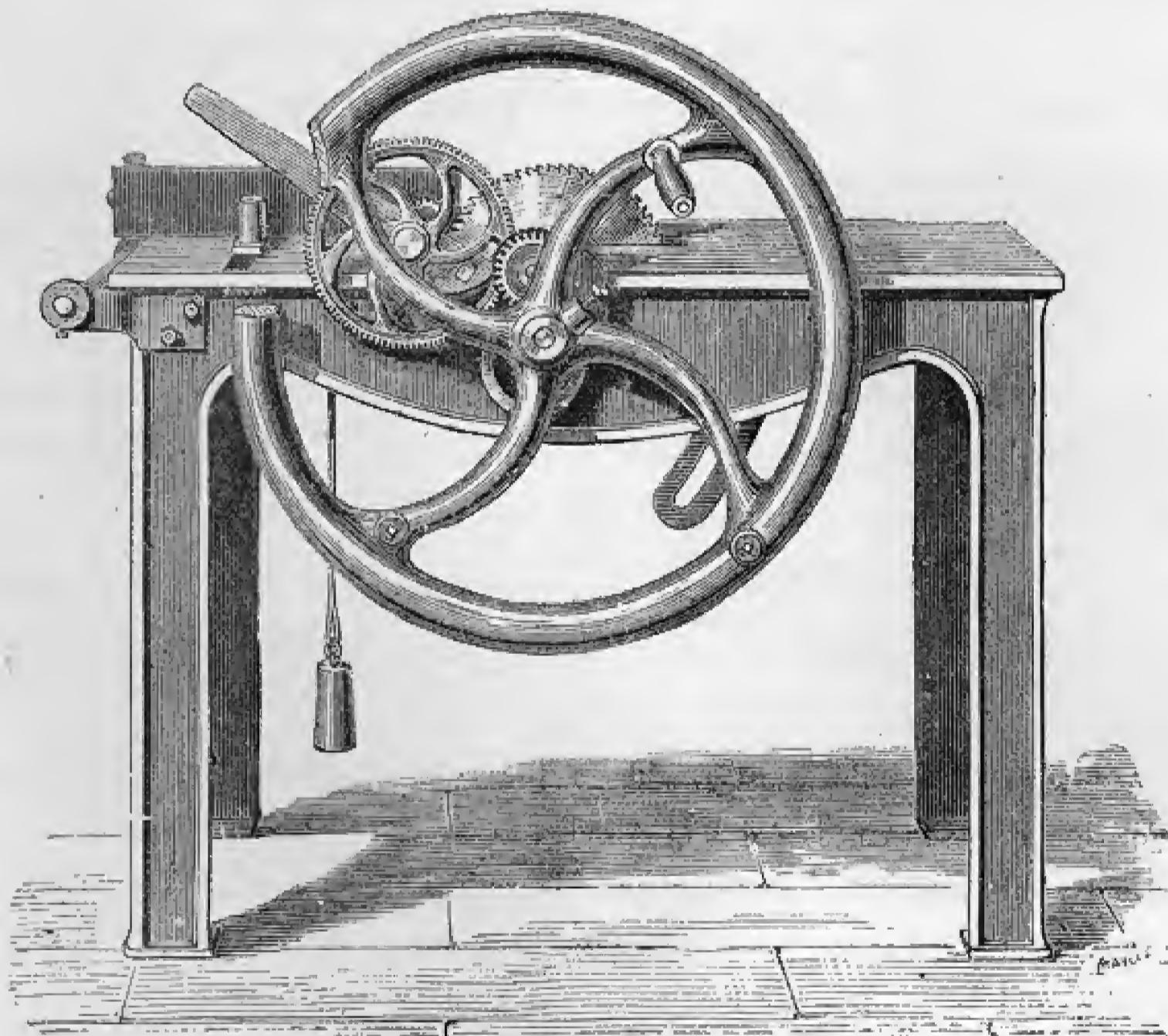
Usually the handle will be found most useful on the main spindle. Sometimes, however, greater speed is desired. For this purpose there is a second spindle, to either or both ends of which a handle may be attached, as at E. By this means the large cog-wheel is worked into a smaller cog on the main spindle, thereby increasing the rate of speed three times. Steam or Horse-power, where available, may advantageously be applied to this spindle, and for the purpose Fast and Loose Pulleys are supplied.

This machine may fairly be said to be unrivalled for completeness, compactness, and cheapness; above all for its strength yet simplicity of construction, which is such that even gross carelessness can hardly injure any part. One caution only is there to be given, viz.:—

*In lowering the Spindle, the tension of the Band Saw must be slackened, lest it be broken by the increased strain.*

"THE IMPERIAL" HAND POWER, SELF-FEEDING  
PATENT CIRCULAR SAWING, GROOVING,  
TENONING, AND REBATING MACHINE.

With Rising and Falling Spindle.



Over Two Thousand of these Machines are now in use, and are giving entire satisfaction.

## "THE IMPERIAL" HAND POWER SELF-FEEDING PATENT CIRCULAR SAWING MACHINE.

Price, with extra Saw, Rollers, and Bearings for long stuff . . . . £12 10 0

With Rising and Falling Spindle for Grooving, Tenoning, and Rebating £14 10 0

This Machine consists of a strong planed Iron Table or Frame, with a transverse Spindle in the centre, carrying the circular Saw-blade and hand driving or fly wheel.

It will cut timber up to 4½ inches thick.

The Saw Spindle is made to rise and fall by means of the Lever and Swing below the Table, so that the Machine may be used for Tenoning, Grooving, and Rebating.

Attached to the Driving Shaft is an automatic Feed Motion, whereby the wood is brought up to the Saw-blade as the cut progresses.

Two double Cog Wheels to change are provided, whereby the rate of Feed Motion is varied according to the thickness of timber in cut. There is a Fence Plate parallel to the Saw, fitted with set screws at back, whereby it can be regulated and adjusted; it may also be set at any angle for Bevel Cutting. A groove in the Table serves to guide a Cross Cutting and Mitreing Fence by which this work is done with great accuracy and expedition.

For Tenoning or Grooving the Feeding Apparatus must be released and shifted over: the nut being taken off end of Feed Shaft, and the small set screw in the Wheel released, the Shaft may be drawn out of the way.

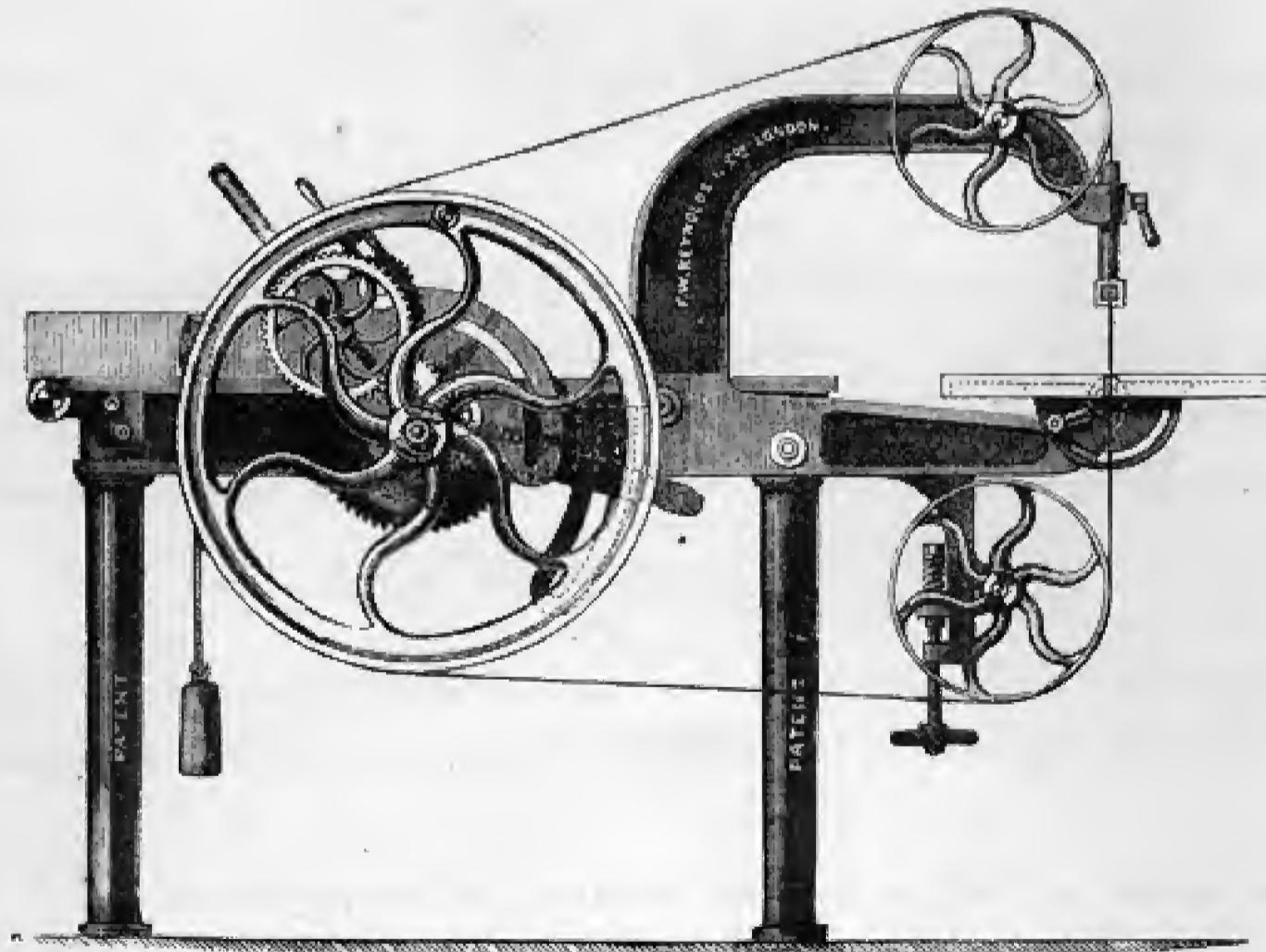
Rollers and Bearings are provided, so that long lengths of timber may be cut.

This Saw Bench may be had with Fast and Loose Pulleys, for working by STEAM POWER, if required, for the extra charge of 20s.

“THE ARCHIMEDEAN” SELF-FEEDING  
COMBINED CIRCULAR AND BAND SAW  
SAWING MACHINE.

With Patent Drag Motion, and Rising and Falling Spindle for Grooving,  
Tenoning, and Rebating,

Price, complete, £24. Without Band Saw, £16 16s.

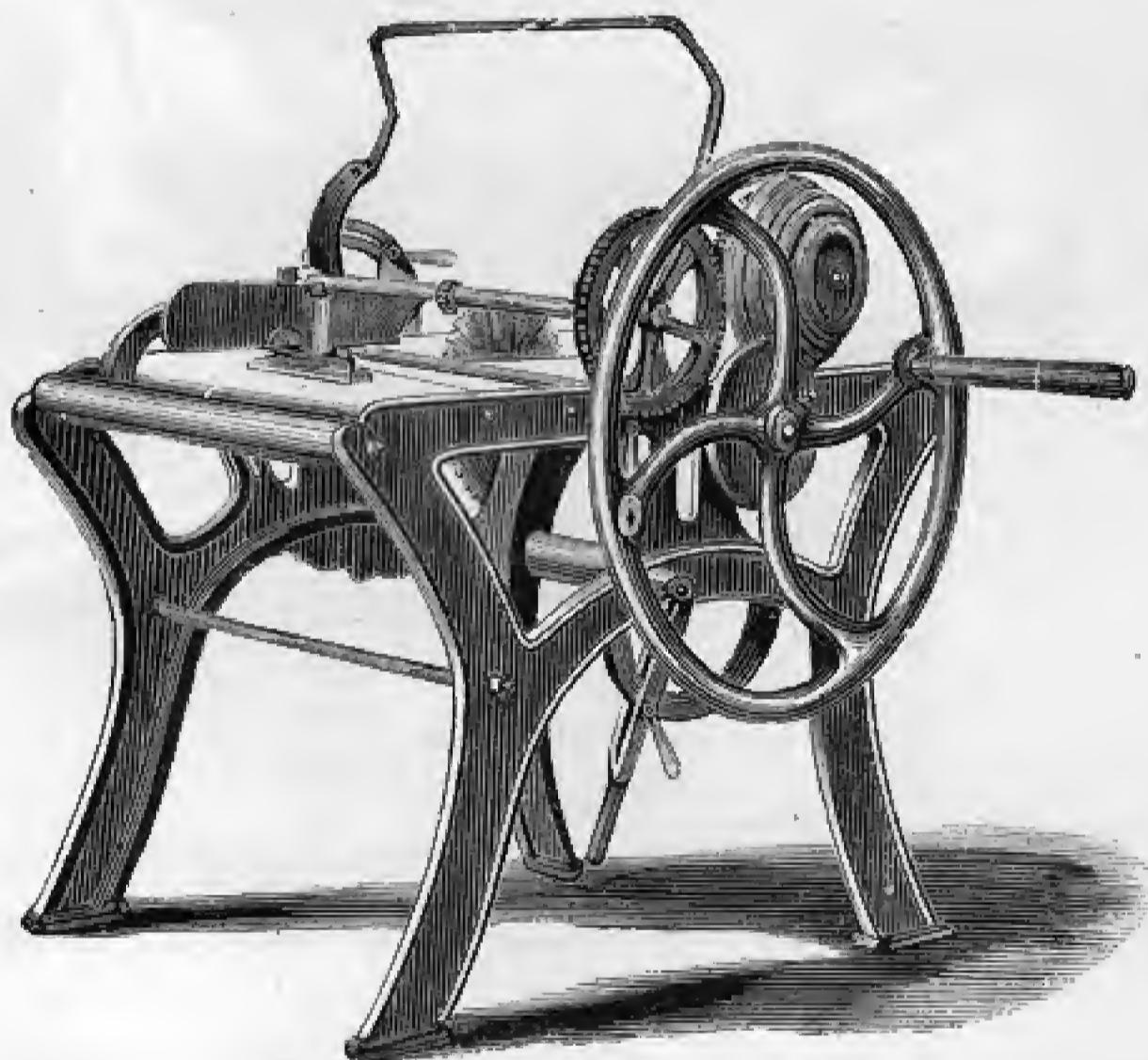


Fast and Loose Pulleys for Steam Power . . . £1 0 0 extra

“THE ROYAL” PATENT HAND POWER  
SELF-FEEDING CIRCULAR SAW BENCH.

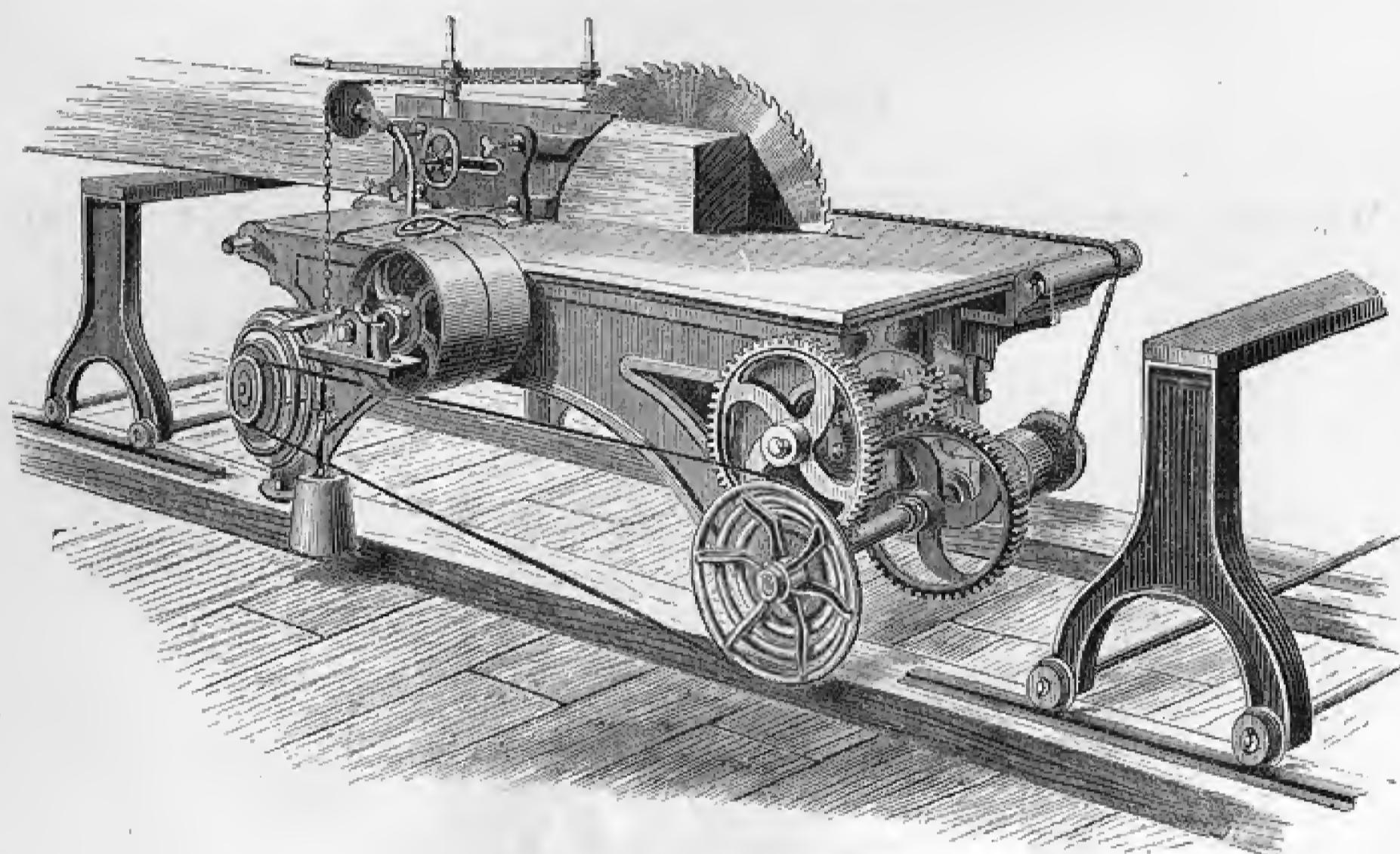
Price £12 12 0.

With Rising and Falling Spindle . . . . . £14 14 0



“The Royal” Saw Bench, has been before the trade for some time, and its advantages are pretty generally known. It occupies very little space, is easily arranged, and will be found an efficient Sawing Machine, adapted for Joiners, Wheelwrights, and Coach Builders’ use.

IMPROVED CIRCULAR SAWING MACHINE FOR  
STEAM POWER.



Size of Table, 6ft. by 3ft.

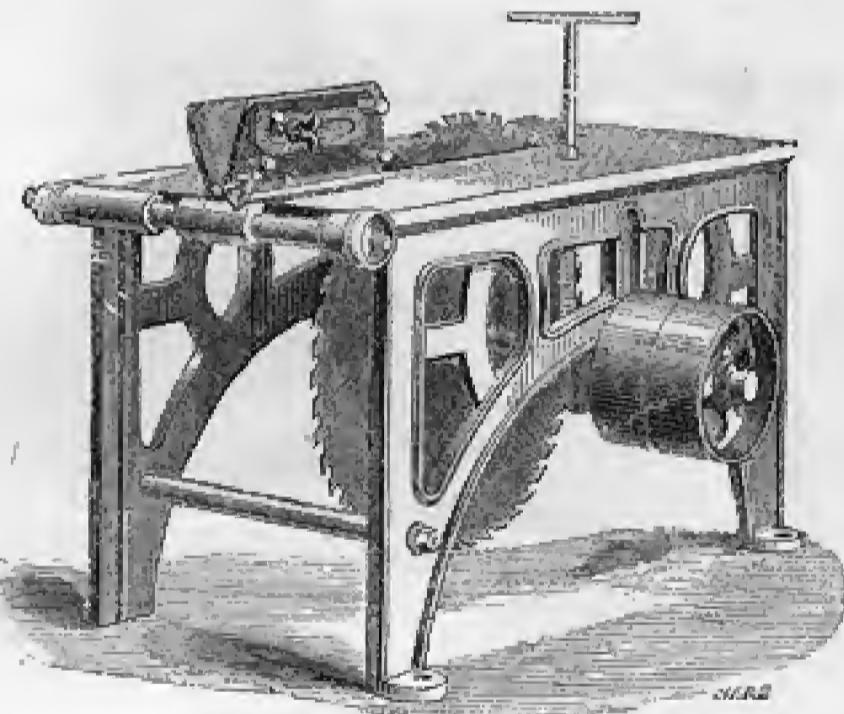
Price, complete with 42in. Saw, Self-acting Feed and Roller Motion ..	£75	0	0
Without Self-acting Feed or Roller Motion ..	£50	0	0
If with Timber Carriages, length of Rail, and screws, as shown above, ready for fixing ..	£15	0	0
extra.			

This Machine can be fitted with 48 in. Saw if required.

## IMPROVED CIRCULAR SAW BENCH FOR STEAM POWER.

Size of Table.

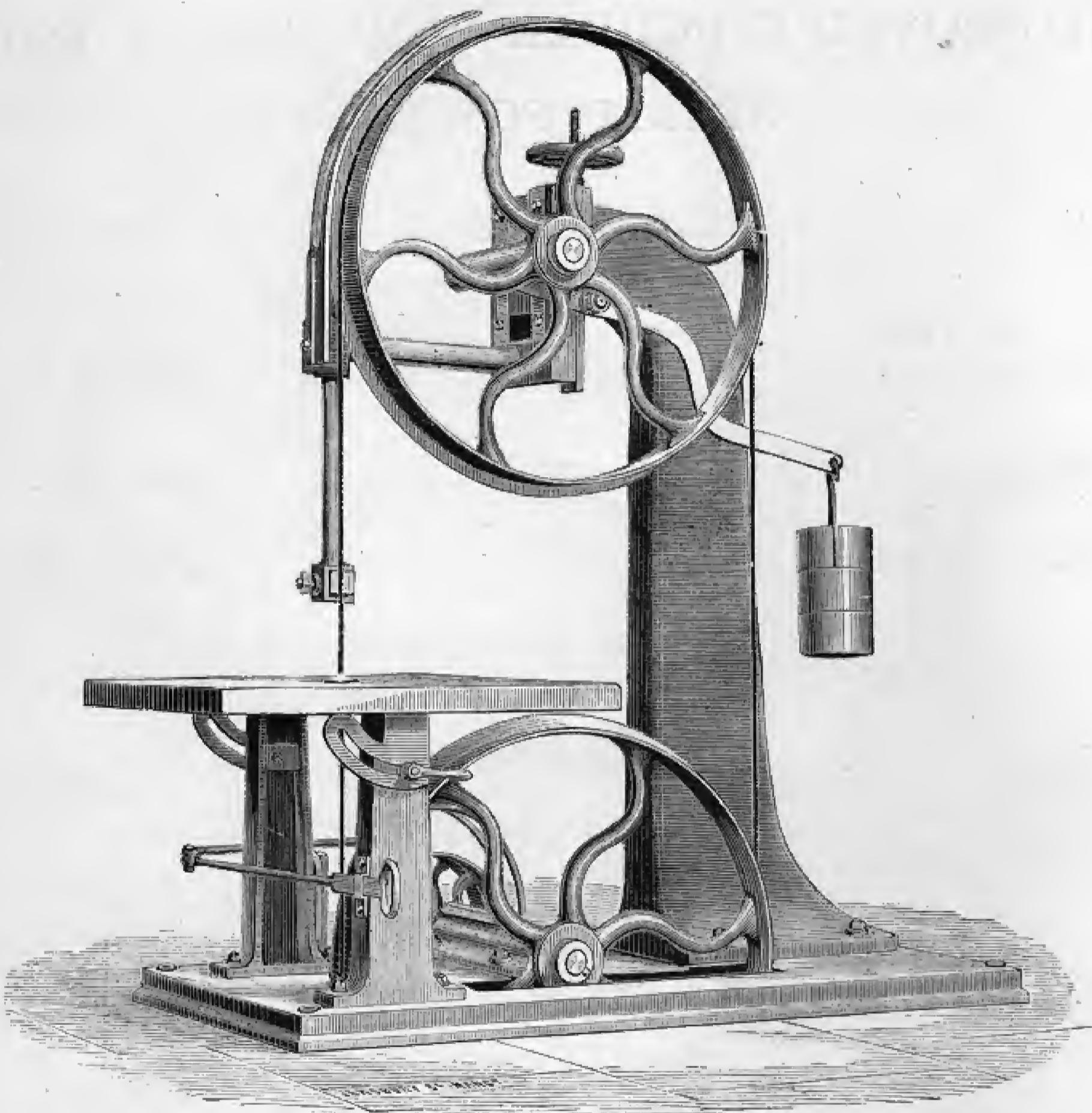
3 ft. 6 in. by 1 ft. 10 in. . . . .	With 18 in. Saw . . . . .	Price £12 10 0
4 ft. . . . . by 2 ft. . . . .	," 24 in. . . . . ,	," £21 0 0
5 ft. . . . . by 2 ft. 6 in. . . . .	," 30 in. . . . . ,	," £22 10 0



The above drawing represents the Bench shewing its facilities for regulating the Fence for feathering boards, &c. The Fence can be turned quite off the Table for cross cutting, &c. It has a Roller in front to take on the stuff, and may be had with Rising and Falling Spindle as shewn above, for Grooving, Rebating, &c., for £7 10s., £10, or £12 10s., extra according to size.

## IMPROVED ENDLESS BAND SAW MACHINE.

NEW PATTERN.



The above improved Band Sawing Machine is fitted with Canting or Swivel Table for Bevel cutting, and the Pulleys are arranged so as to allow the Saw to admit wood the width of the full diameter of the Pulleys. The Top Pulley is mounted so as to allow for the expansion and contraction of the Saw when working.

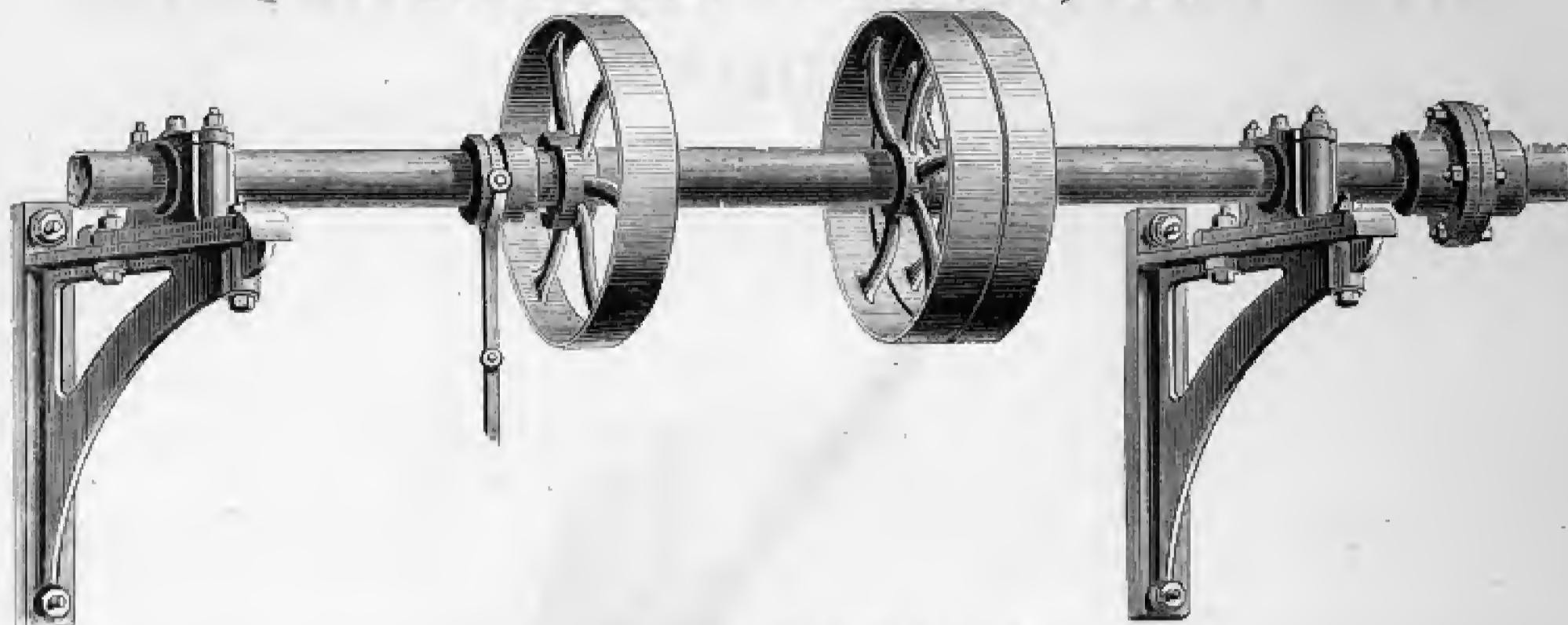
With 18in. Pulleys and Table 30in. square, to cut 6in. deep, Price £27 10 0
,, 26in. ,,, 30in. ,,, 8in. ,,, ,, £44 0 0
,, 30in. ,,, 36in. ,,, 18in. ,,, ,, £45 0 0
,, 36in. ,,, 36in. ,,, 18in. ,,, ,, £46 5 0
,, 42in. ,,, 36in. ,,, 18in. ,,, ,, £52 0 0

A small size Machine is made, with 12in. Pulleys and 12in. Table, adapted for Wood 3in. thick.

Price £13 10 0

With Fly-Wheel, to work by hand .. .. .. £14 10 0
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S H A F T I N G, P U L L E Y S, B R A C K E T S,  
P L U M M E R B L O C K S, &c.



PRICES OF SHAFTING, &amp;c.

DIAMETER—Inches	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4
Bright Wrought-Iron Shafting, best quality, turned to Standard Gauge, per foot	s. d.									
Plummer Blocks, fitted with top and bottom brasses, and cap, bolts, and nuts complete	2 11	3 0	4 2	5 3	6 0	7 6	9 0	12 6	13 9	16 6
Loose Collars, bored, turned, and fitted with set screw	12 0	14 6	20 6	26 6	33 0	40 0	46 6	52 6	60 6	71 0
Bright-turned Couplings, with bright bolts and nuts, and key-ways cut	4 6	5 0	6 6	7 0	7 6	7 9	8 3	9 6	11 0	13 9
	22 0	24 6	27 6	34 0	41 0	48 0	55 0	62 0	68 0	88 0

Odd Short Lengths extra.

## CIRCULAR SAWS

Warranted Best Cast Steel, Machine Ground, Set, Sharpened, and Trained.

6	7	8	9	10	12	14	15	16	18	20	22	24	26	28	30	36 in. diameter.
7/-	8/-	9/6	11/-	13/-	16/-	20/-	22/-	24/-	30/-	36/-	42/-	48/-	56/-	66/-	76/-	120/- each.
40      42      48 in. diameter.																
160/- 180/- 270/- each.																

## BEST CAST STEEL CIRCULAR GROOVING SAWS.

1/8	1/4	3/16	1/2	5/16	3/8	7/16	1/4	5/8	3/4	5/16	1 in. thick.
1/6	2/-	3/4	3/6	3/9	4/-	4/4	4/8	5/-	5/6	6/-	per in. diameter.

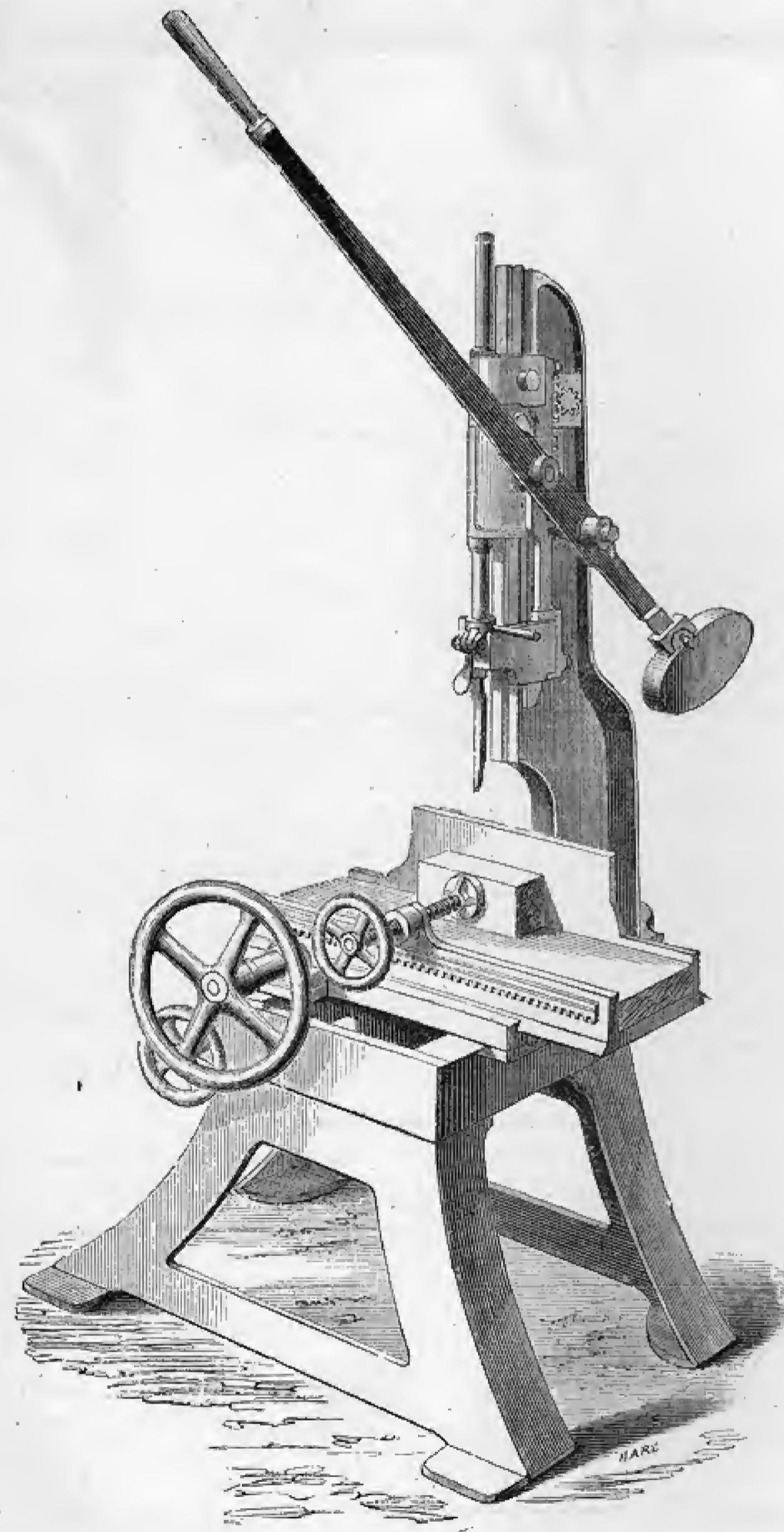
Discount from Circular Saws per cent.

Round-edged Topping Files, for sharpening Circular Saws, 8s. 6d. per dozen.

## PERRIN'S PATENT ENDLESS FRENCH BAND SAWS.

WIDTH.	LENGTH IN FEET.												
	12	13	14	15	16	17	18	19	20	21	22	23	24
1/8 3/16 1/4 5/16 in...each.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1/8 in.....,,	7 0	8 0	8 6	9 0	9 9	10 6	11 6	12 3	13 0	13 6	14 6	15 0	15 6
1/2 in.....,,	7 6	8 6	9 0	9 9	10 6	11 6	12 3	13 0	13 6	14 6	15 0	16 0	16 6
	8 6	9 3	9 9	10 6	11 6	12 3	13 0	14 0	14 6	15 0	16 6	16 9	17 6

“THE UNIVERSAL” PATENT MORTISING  
MACHINE.



## “THE UNIVERSAL” PATENT MORTISING MACHINE.

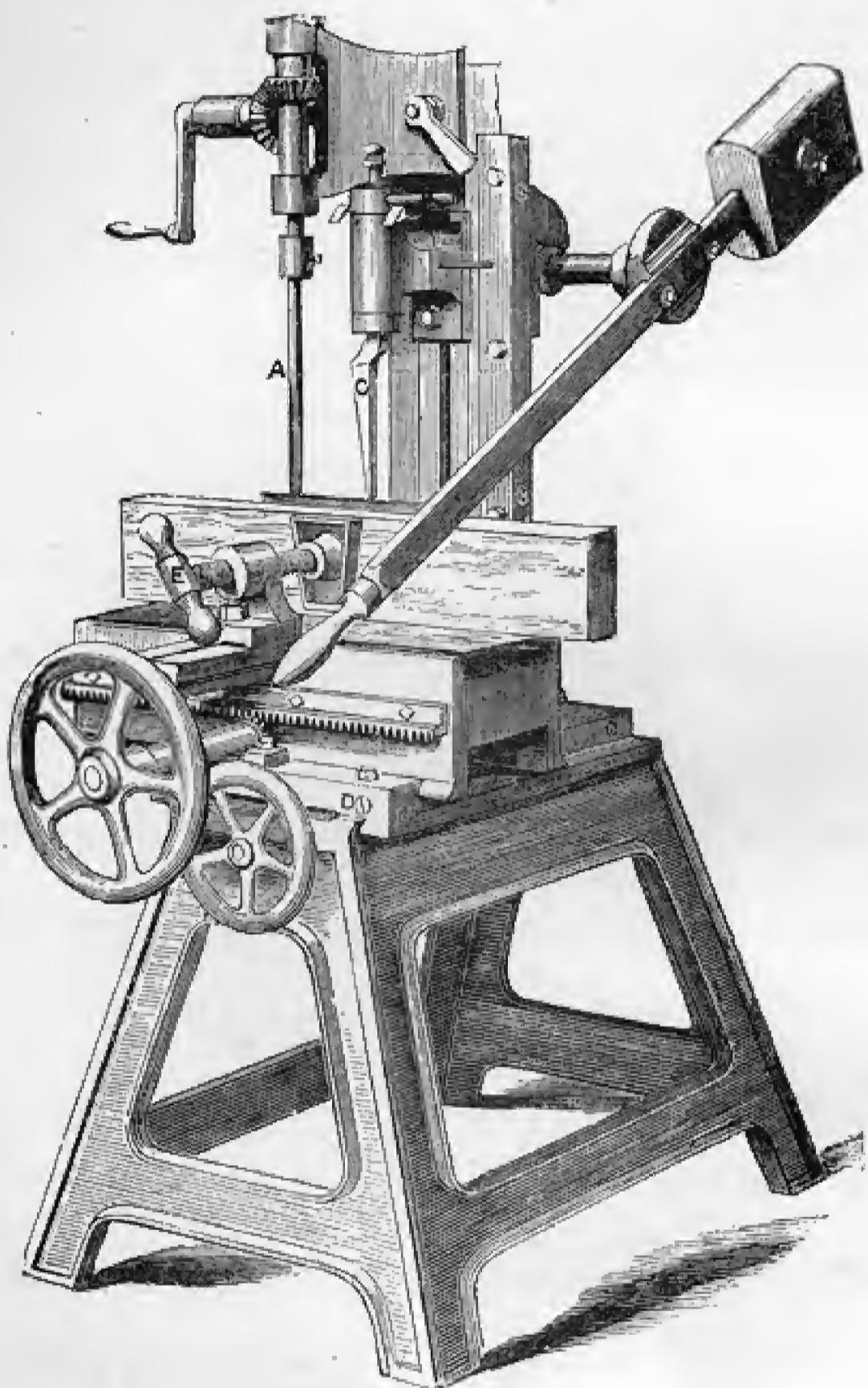
Price, with Chisels, Core Drivers, and Screw Keys, complete . . . . . £11 0 0

In this Machine the Lever is directly connected, and gives motion to a solid Wrought Iron Crank, which working in a Slide attached to the Spindle, alternately raises and lowers the Cutting Tool to the required position. This is a great improvement on the original plan of the Machine, great additional power being obtained, and the Chisel, being more direct and perpendicular in its action, performs its work with great exactness, and with diminished friction, the working parts not being rendered liable to break or get out of order.

It also possesses great advantages in the facility by which the Spindle is raised and lowered for different thicknesses of material, and in the improved means for reversing the Chisel. Being stronger and less complicated in its construction, it is at once a powerful and efficient yet simple Machine, adapted for Contractors, Builders, Joiners, Wrights, Ship Builders, and Coach Makers, and is the cheapest Mortising Machine made.

It admits wood 13 in. by 6 in. Length of stroke, 5½ in.

“THE IMPERIAL” PATENT MORTISING AND  
BORING MACHINE.



A detailed description of the above Machine is found on opposite page.

Several Thousand of the above are in use, and giving entire satisfaction.

From its compactness this Machine is specially adapted for shipment abroad.

## “THE IMPERIAL” PATENT MORTISING AND BORING MACHINE.

Price, with Chisels and Core Drivers . . . . . £14 0 0

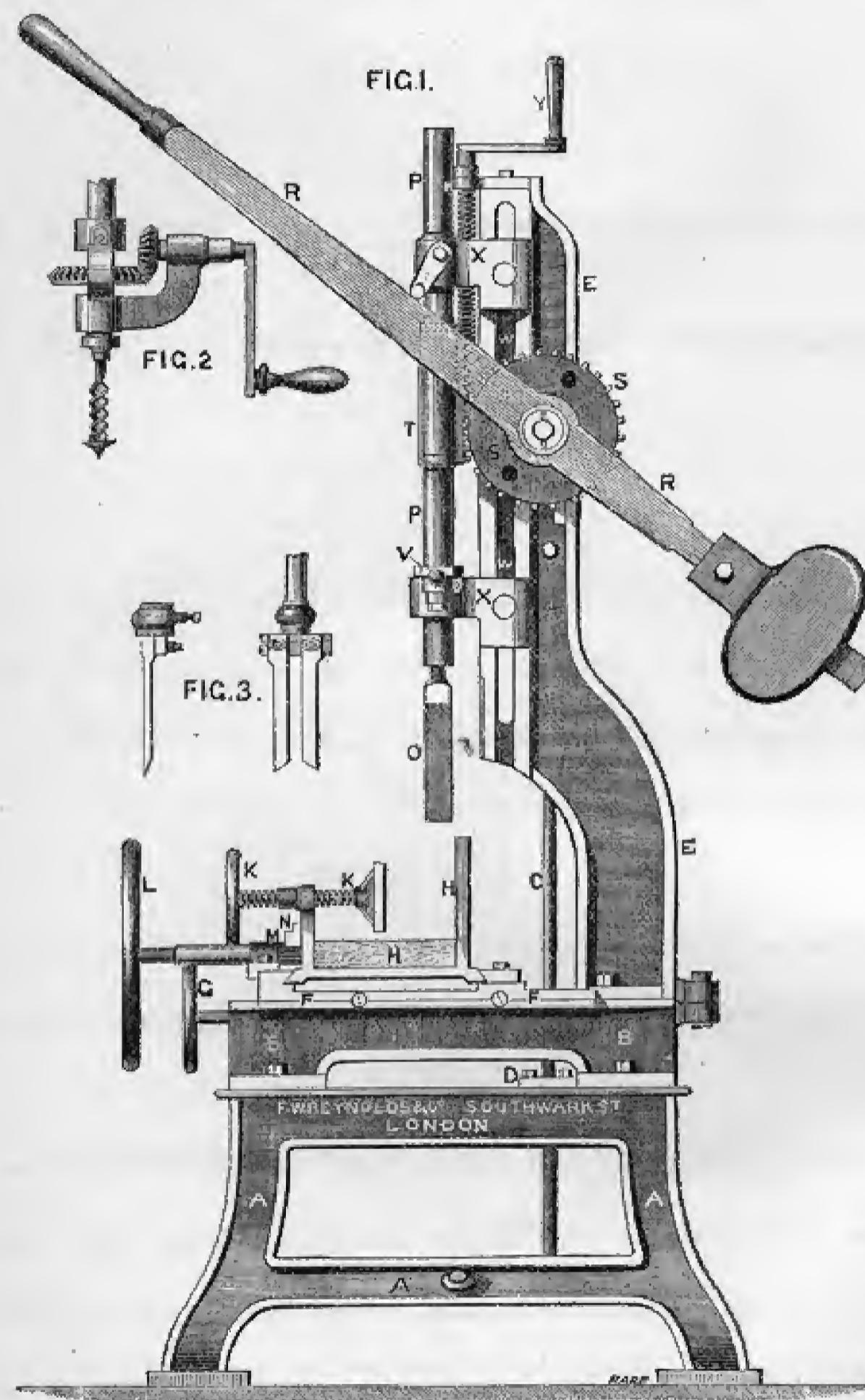
With Boring Apparatus, Augurs, Rimmers, &c., extra . . . . . £1 0 0

The vertical frame forming the slides of this machine is bolted down on to a strong table bearing the slide D for carrying the timber bed which is moved with a double traversing motion by the racks, pinions, and hand-wheels, to the required position. At the back of this shifting bed is a fence, against which the timber is firmly fixed by the clamping screw E.

The chisel C is carried in a revolving spindle mounted in a sleeve on the vertical sliding block; at the top of this sleeve is a small lever handle for giving it a half turn to reverse the chisel for the opposite cut.

The large lever handle is carried on the shaft moving in rack at back of sliding block, and being depressed, forces this block with the chisel down to effect the cut, and its elevation again withdraws the chisel, this is reversed for opposite cut, and the operation is repeated. Core Drivers are supplied with the machine for clearing the core out of the mortise when cut and completed. The Boring apparatus with augurs, rimmers, &c., is carried on the sliding block, independent of the mortising chisel, the requisite rotary motion is imparted by the winch handle, and the penetration by the depression of large lever handle. The depth of the cut is farther regulated by the adjustment for altering the height according to the thickness of the wood.

**"THE ROYAL" COMBINED PATENT MORTISING,  
TENONING, AND BORING MACHINE.**



Since the invention of this Machine more than three thousand have been sold. It is in use in most of the leading workshops throughout the country, and in every case has given complete satisfaction.

## “THE ROYAL” COMBINED PATENT MORTISING, TENONING, AND BORING MACHINE.

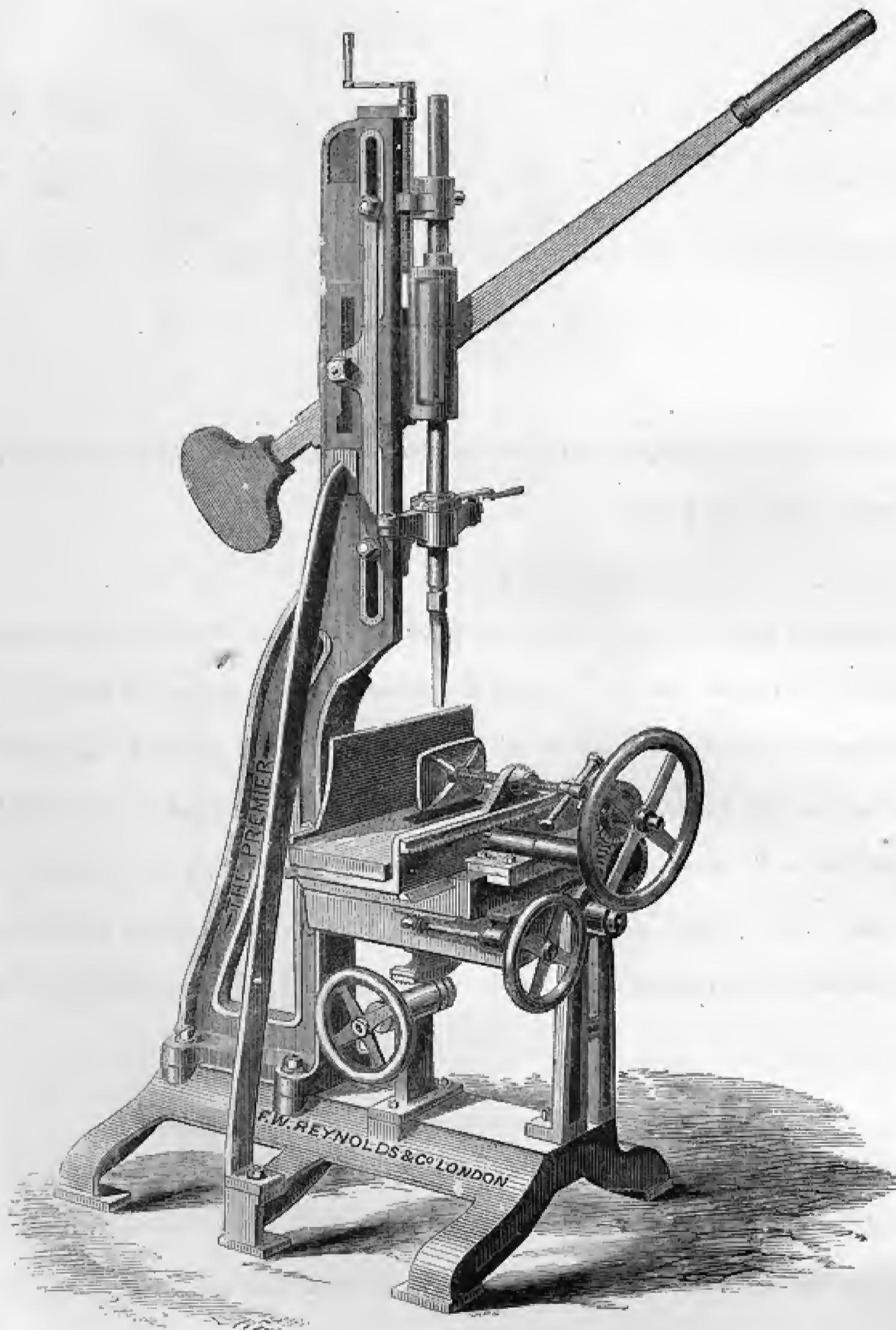
Price, with Chisels and Core Drivers .. . . .	£15 15 0
Tenoning Tool .. . . . .	£2 0 0 extra.
Patent Boring Apparatus, with Patent Bits, Rimers, &c, complete ..	£3 5 0 ,

This Machine is of a very compact and powerful construction, and especially adapted for mortising in hard wood, the power exerted being applied directly to the work.

Drawing on opposite page represents side elevation of the Machine. The Bed B is mounted on a strong Iron Stand or Frame A, and carries a slide F moving in and out by the Worm and Wheel G. The wood to be mortised is pressed against Back Fence Plate H, by the Clamp Screw and Wheel K, while the Tray or Bed H is moved to the right or left by the Wheel L M N. The Chisel O is carried in a Revolving Spindle P, mounted in a Hollow Sleeve T, in which is a small Lever Handle V for giving it a half turn to reverse the Chisel for opposite cut. The Vertical Motion is given by the Wrought Iron Lever R, its depression effects the cut, and its elevation again withdraws the Chisel—this is reversed, and the operation is repeated for the opposite cut.

The Boring Apparatus (Fig. 2), is fixed in Spindle P when required, as also the Tenoning Tool (Fig. 3), the required depression being obtained by moving the large lever handle. When supplied with Boring Apparatus and Tenoning Tool this Machine is most serviceable, and will be found invaluable for general work.

“THE PREMIER” COMBINED PATENT  
MORTISING, TENONING, AND BORING MACHINE  
WITH SWIVEL BED.



78, Southwark Street, and The Grove, London, S.E.

## "THE PREMIER" COMBINED PATENT MORTISING TENONING, AND BORING MACHINE,

WITH SWIVEL BED.

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Price £25 0 0.

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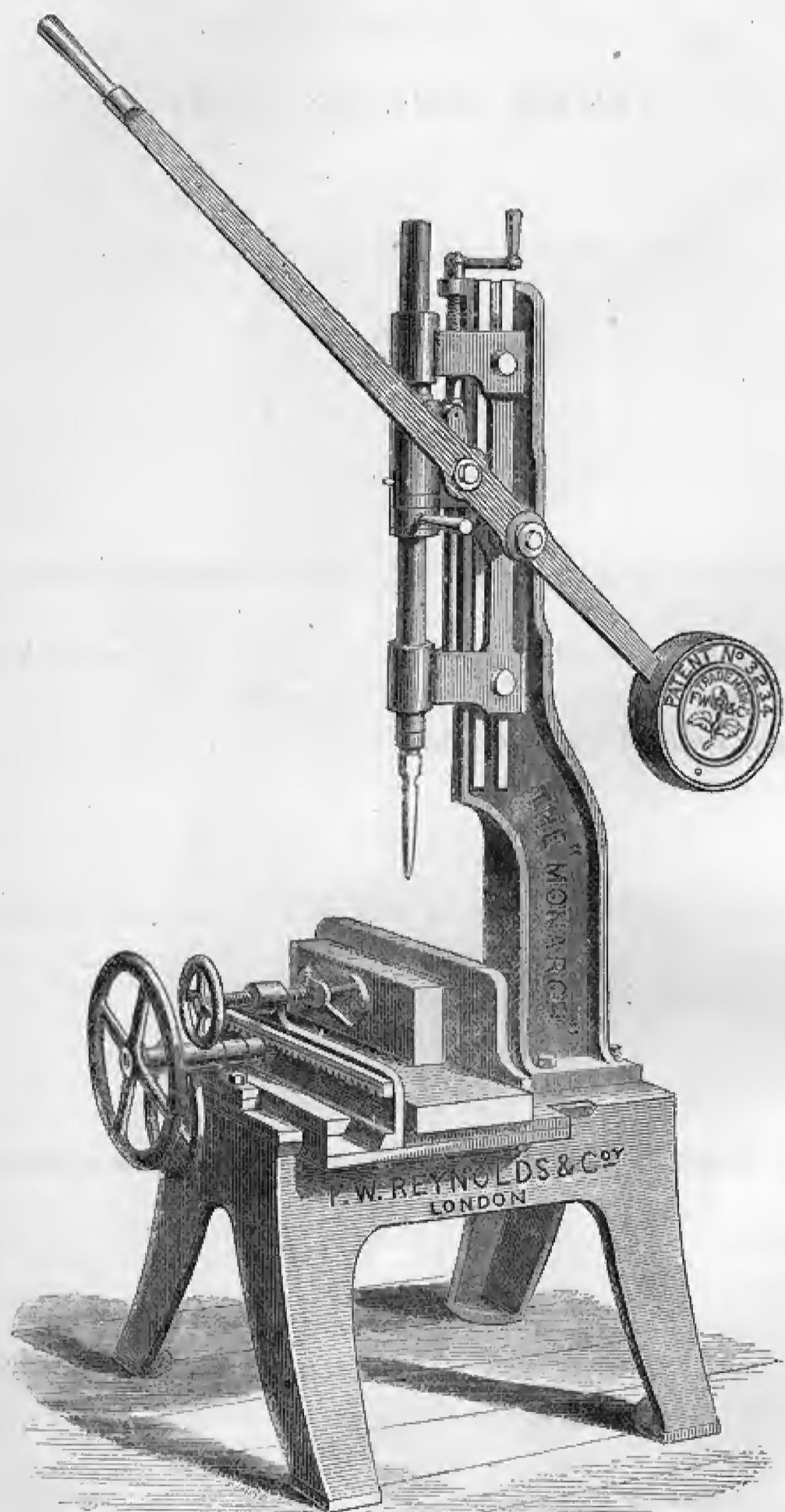
This Machine is similar in construction to "The Royal" Mortising Machine described on previous page, but its great advantage is the Shifting Bed for the timber, which besides moving horizontally and laterally, can be raised to any required angle by means of Hand-wheel at side.

This arrangement will be found very useful for many kinds of work, and the extra cost is soon defrayed by the time saved, and the exactness secured in mortising at an angle.

It is supplied with Boring Apparatus and Tenoning Tool, and is the most complete and serviceable Mortising Machine that is made.

It may be had specially fitted for Mortising Naves, &c., for £5 extra. This arrangement will be found peculiarly adapted to the requirements of Wheelwright, Coach, and Carriage Builders.

"THE MONARCH" PATENT MORTISING  
MACHINE.



73, Southwark Street, and The Grove, London, S.E.

## “THE MONARCH” PATENT MORTISING MACHINE.

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Price complete £12 0 0.

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In introducing this Mortising Machine, which combines the latest improvements that have been made in this class of Machinery with several advantages peculiar to itself, F. W. R. & Co. beg to call special attention to the arrangement for raising and lowering the Brackets in which the Chisel-carrying spindle works, they are by this held quite firm while working in different depths of stuff, staying in any required position : the Spindle is consequently not liable to fall suddenly as it does in many machines, damaging the Chisel, and often the man working the Machine.

Great additional power is secured by the direct action of the large lever handle, and the friction is reduced to a minimum.

The Machine is mounted on an extra strong Iron Stand or Base, cast in one piece, and needing no bolts or screws. It stands firm and secure through the heaviest work, a matter of considerable importance in a machine of this kind.

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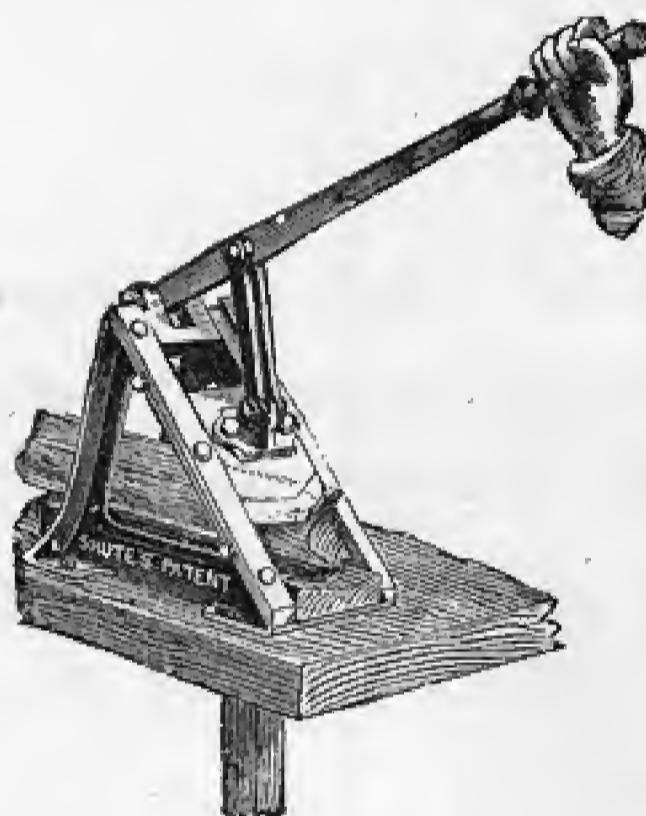
*See articles from “The Builder,” “Building News,” and other Trade Journals, reprinted at end of Catalogue.*

## “SHUTES” PATENT MITREING MACHINE.

Will cut Architraves and Mouldings up to  $5\frac{1}{2}$  inches.

Price £3 5s.

A Special Bronze Medal was awarded for this Machine at the Naples International Exhibition, 1871,  
and at the VIENNA INTERNATIONAL EXHIBITION, 1873.



This Machine is recommended as by far the best Mitre Cutter that has been invented, and is in fact the only true cutting Mitreing Machine made.

It cuts a clean and perfect fitting mitre without splintering.

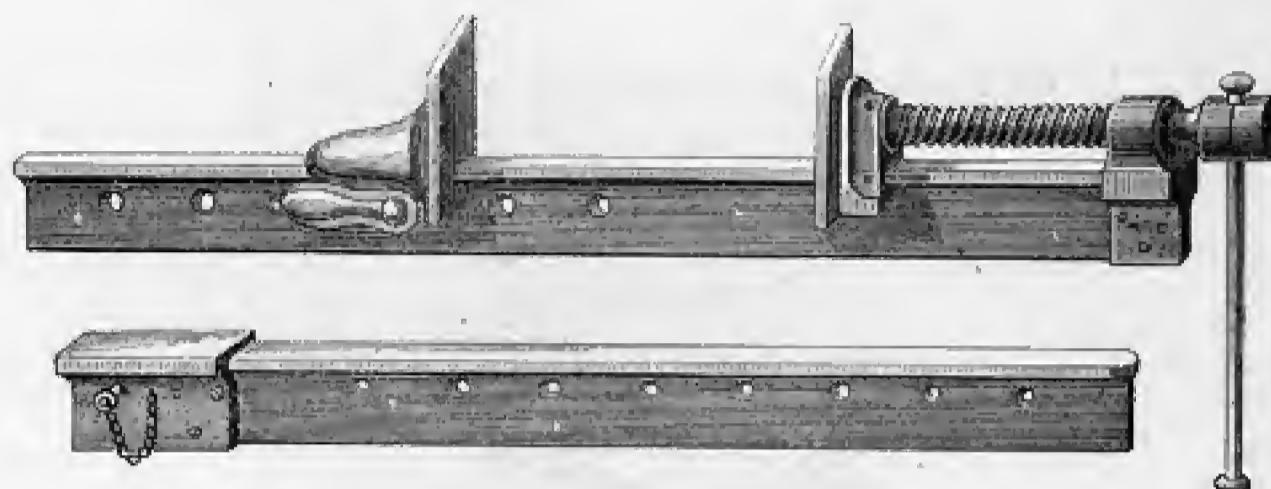
The large number that have been sold, and the continued demand are sufficient proof of its merits.

As a labour-saving Machine for Builders it will be found most valuable, Architraves, Window Sashes, and Mouldings being cut by it with great accuracy and despatch.

It is an invaluable little Machine in any Joiner's, Carpenter's, or Picture Frame Maker's shop.

A larger size is made to take Architraves and Mouldings up to 7 inches. Price £6 10s.

## IMPROVED JOINERS' BENCH CRAMP.

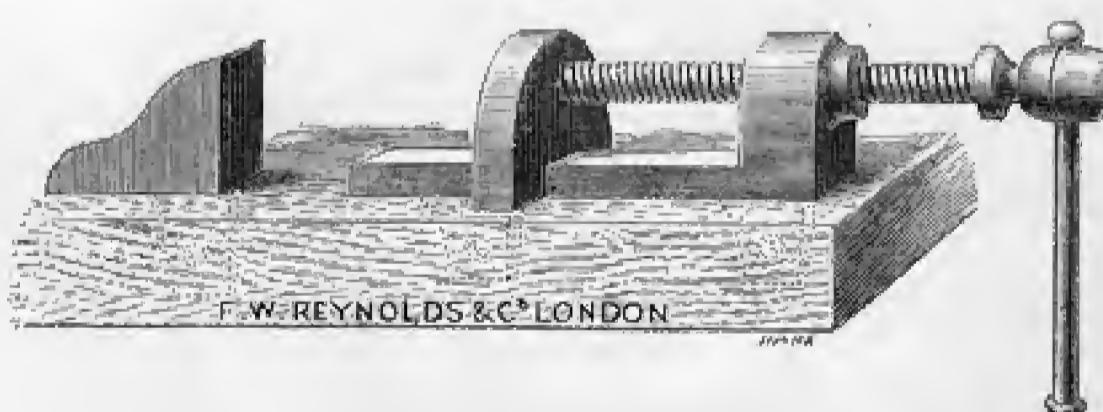


	3 ft.		3 ft. 6 in.		4 ft.		5 ft.		6 ft. long.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Iron mounted.. .	22	6	23	0	25	9	26	6	28	6 each.
Brass ditto, with a Spring										
Lever Pin ..	32	6	33	6	34	0	34	6	35	6

Lengthening Pieces, 2s. 6d. per foot extra.

## REGISTERED JOINERS' BENCH STOP.

Price 13s. each.

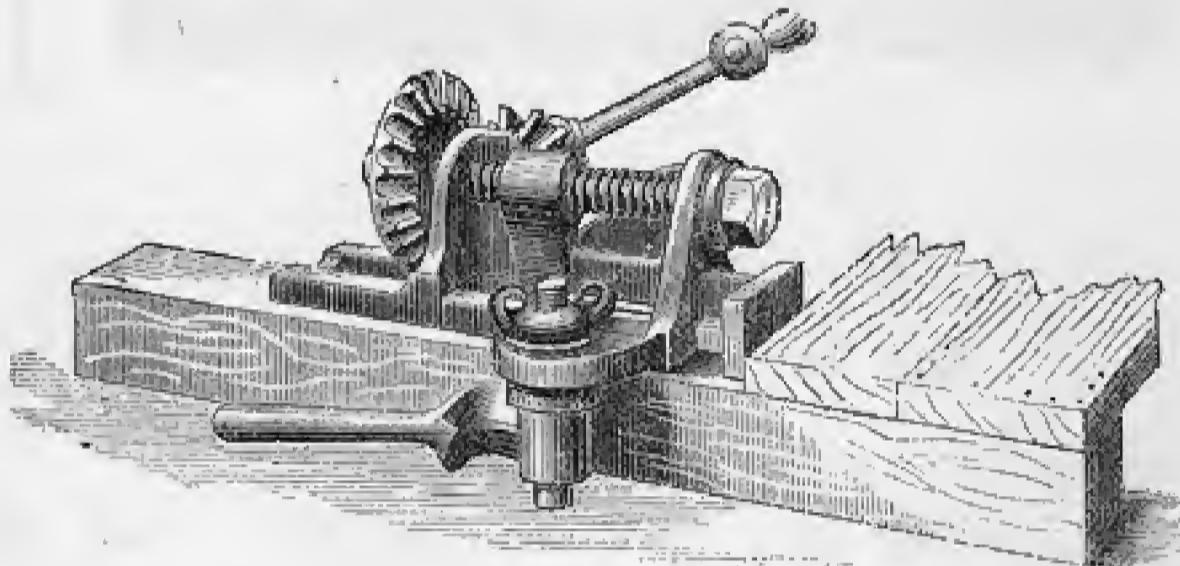


See that our name and address is on all Bench Cramps and Stops. F. W. R. & Co.'s are specially well-made, and in all cases have name and address affixed.

**"THE IMPERIAL"  
IMPROVED PATENT FLOOR CRAMP.**

Will take in any Joist from  $1\frac{1}{2}$  in. to 4 in.

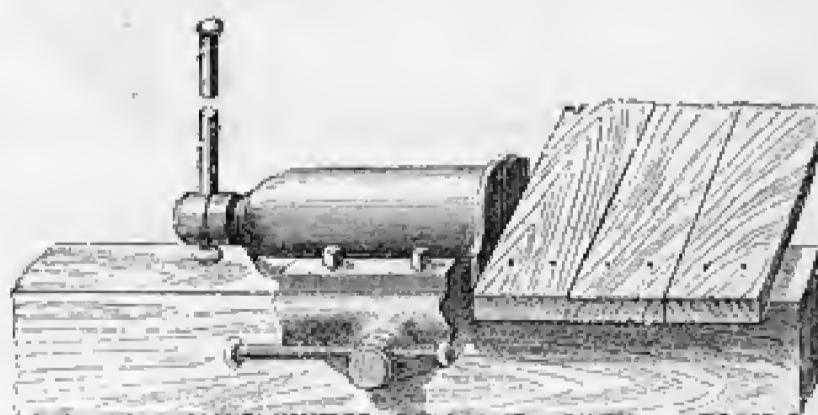
Price £1 6s.



This Cramp is made of the best malleable iron throughout. Many thousands have been sold since its introduction, and it is still acknowledged to be the most useful Floor Cramp made.

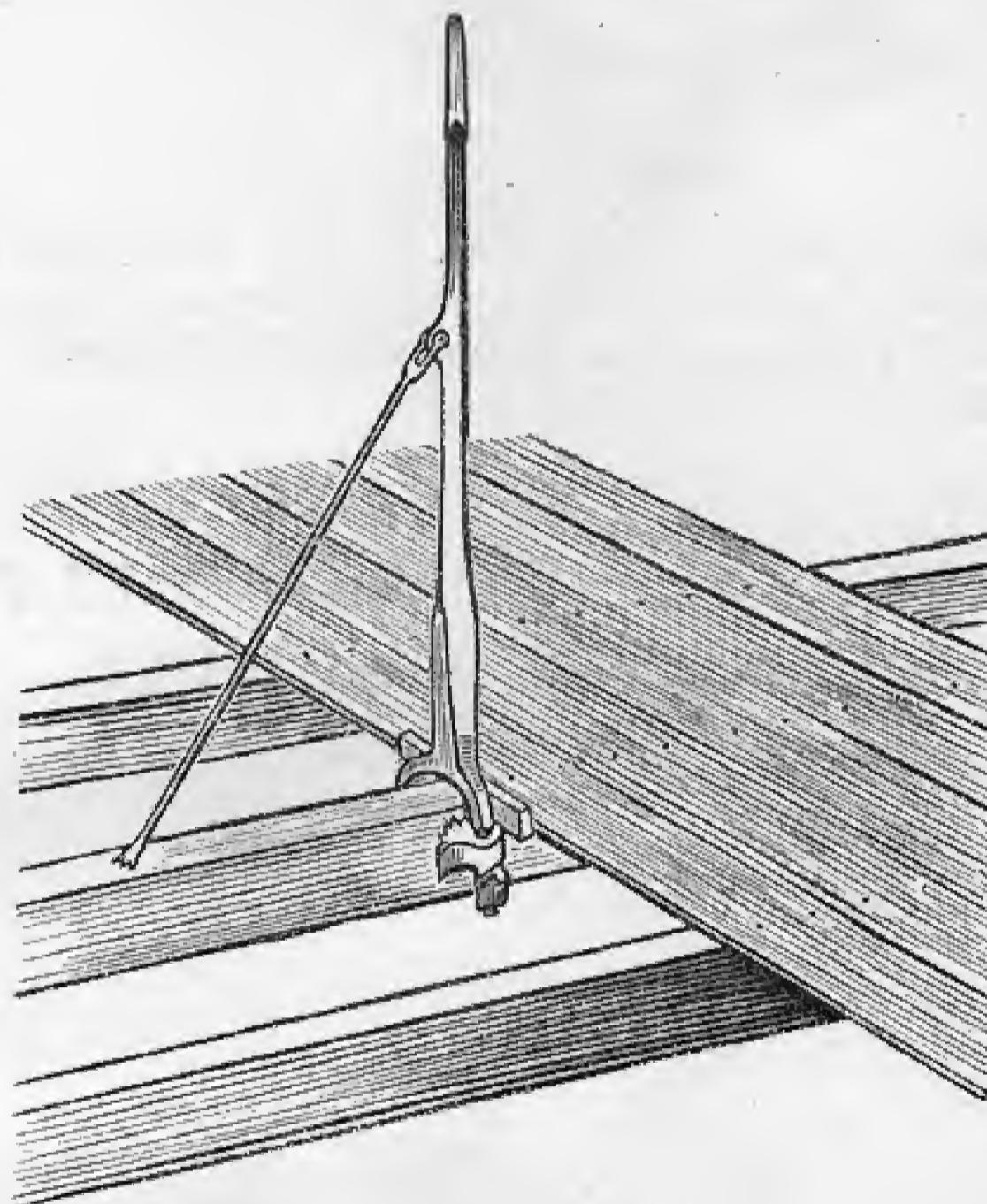
**IMPROVED BOX FLOOR CRAMP.**

Price £1 1s.



## SELF-ACTING PATENT LEVER FLOOR CRAMP.

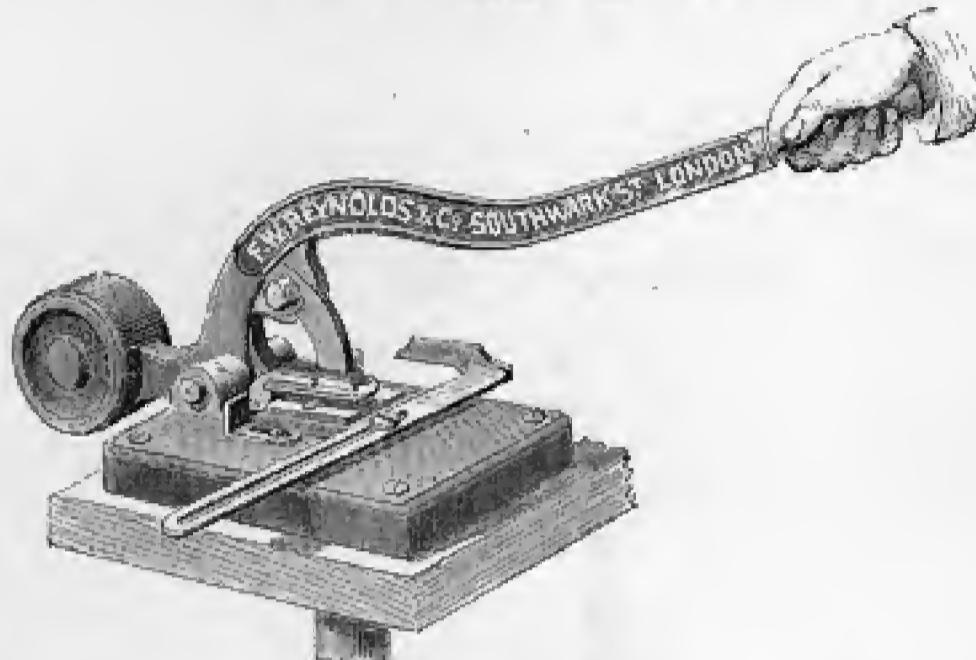
Price 16s. 6d.



The advantages of this Floor Cramp are many. It is easy and simple in its application, and may be used with any sized joist. It can be applied and detached in a moment, is simple in construction, thoroughly well-made, and the cheapest Floor Cramp before the Trade.

**“THE UNIVERSAL” REGISTERED BLIND LATH  
PUNCHING MACHINE.**

Price £2 2 0.



This Machine is made in two sizes :—for No. 1 holes,  $\frac{1}{8} \times \frac{5}{16}$  in., No. 2 holes,  $1 \times \frac{2}{3}$  in.

It punches the cord holes in Venetian Blind laths perfectly clean and without splitting, and has been adopted extensively by the leading Blind makers in England and on the Continent.

It is the cheapest machine that is made for this purpose.

**“THE UNIVERSAL” BLIND PULLEY HEAD  
MORTISING MACHINE.**

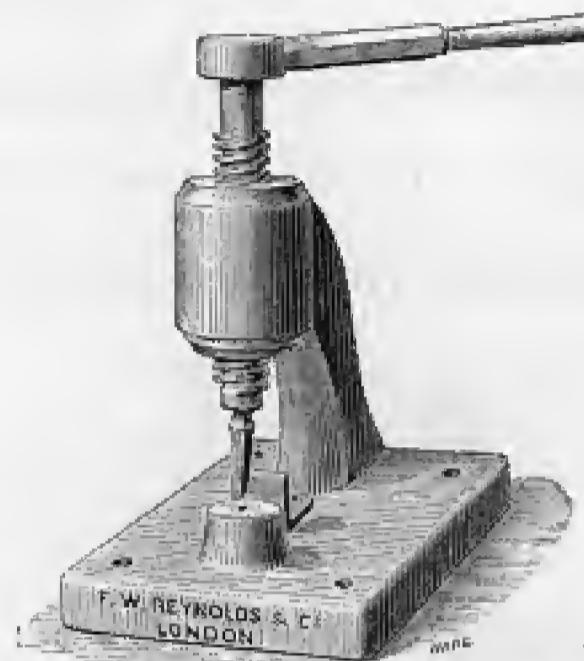
Price £4 4 0.



A lad may with this machine mortise at least 4 or 5 holes per minute.

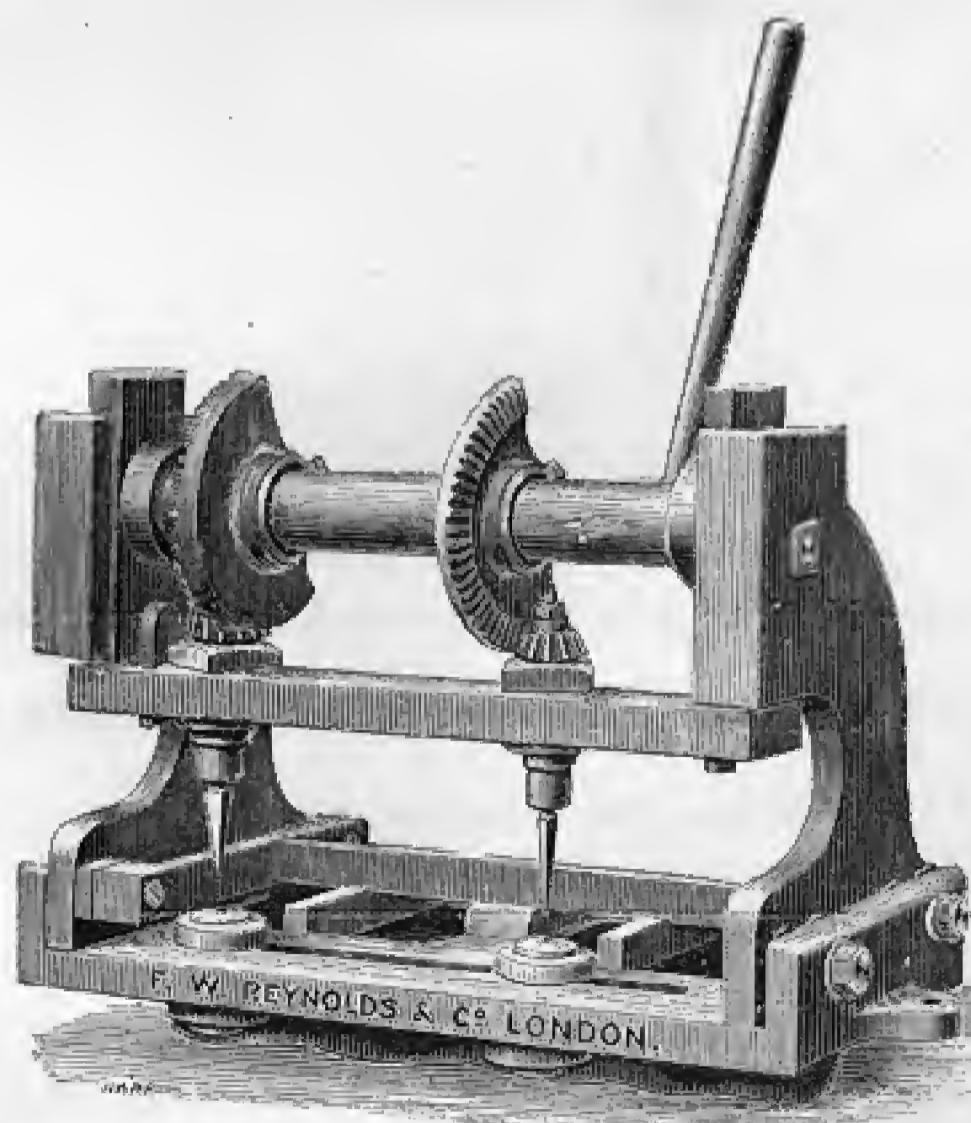
‘ THE UNIVERSAL’ REGISTERED SLATE  
HOLING MACHINE.

Price, complete with Guides . . . . . £2 2 0



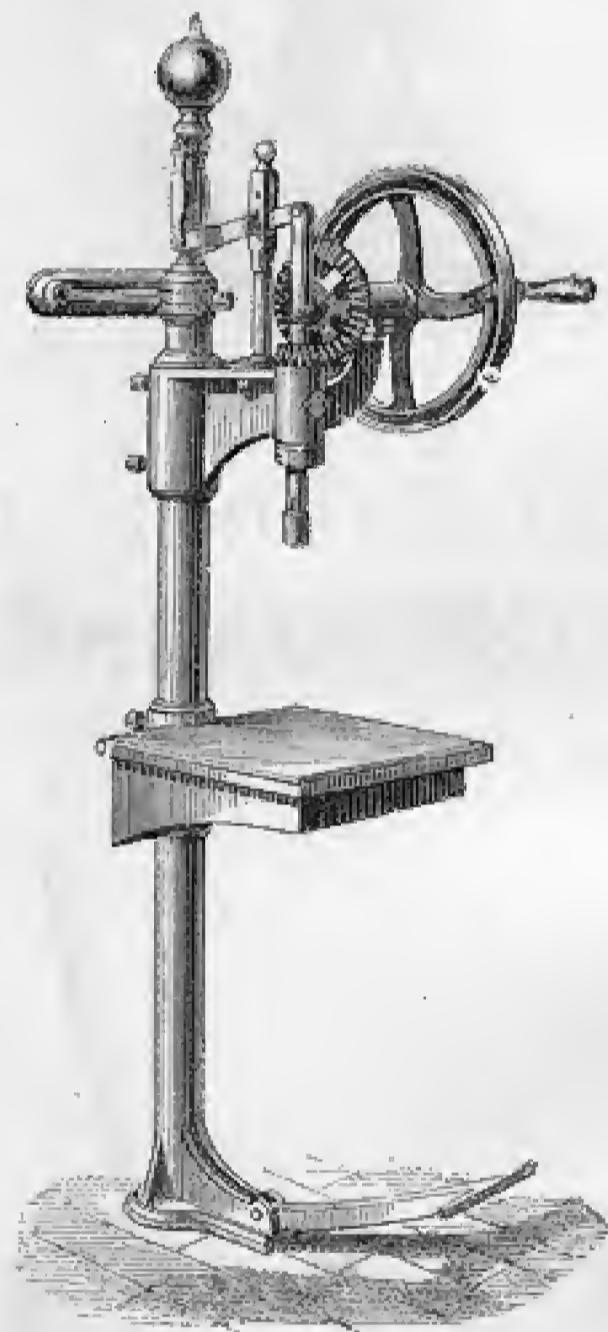
“THE ACME” REGISTERED DOUBLE SLATE  
HOLING MACHINE.

Price, complete with Guides . . . . . £6 15 0



## THE PILLAR DRILLING MACHINE.

This Machine is introduced as the most speedy and perfect of its kind. It occupies the least possible space, and one man only is required to work it; the pressure on the Drill being produced by the foot, both hands are left free for working the Machine. The Table is easily adjusted to any height, and will carry articles up to 2 ft. 3 in. The Drill is instantly released by pressure of the Ball on top.

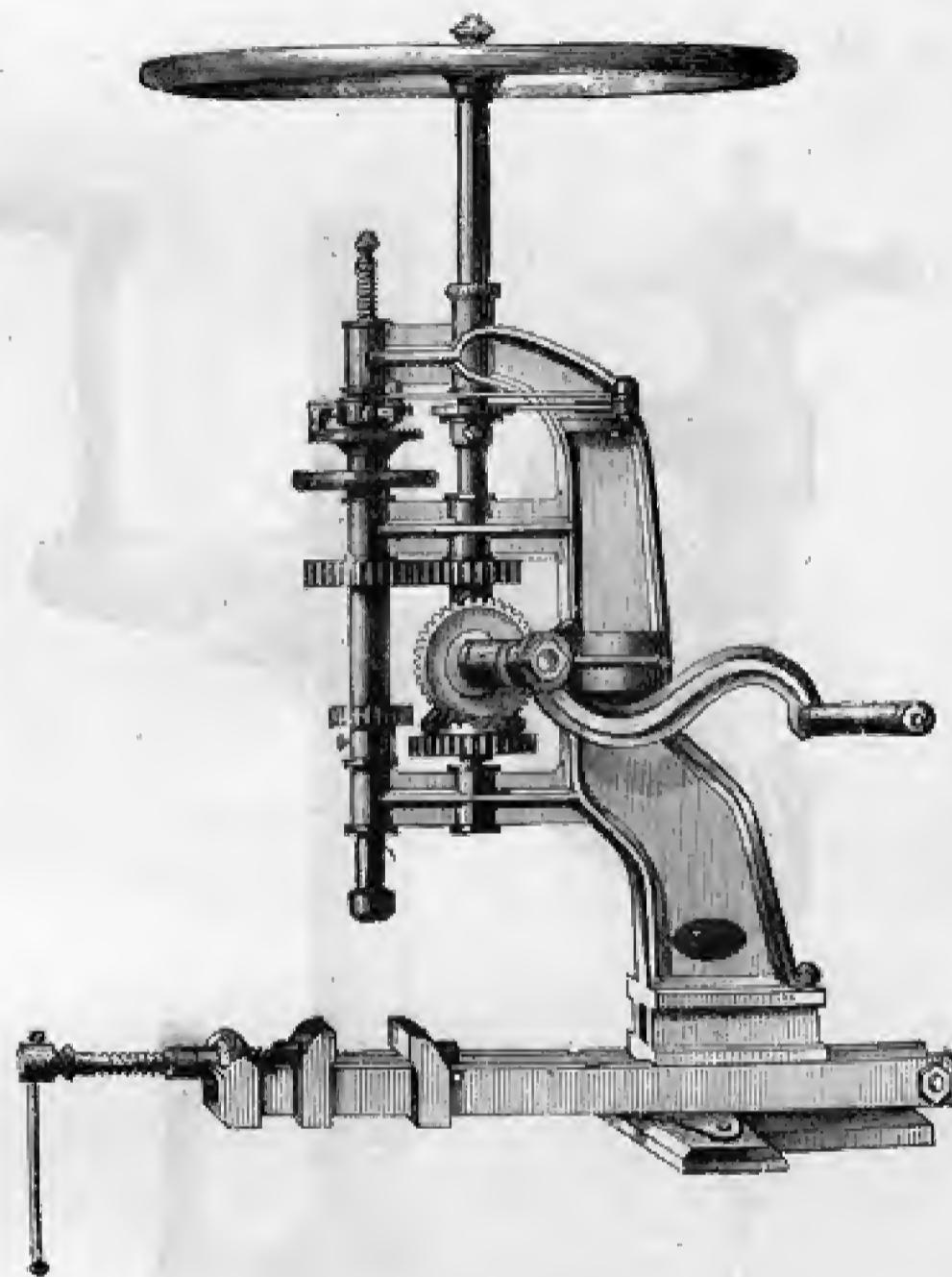


The above drawing shews the Machine with Table adapted for Ironmongers, Blacksmiths, and Builders and general purposes, but it is made with circular Table faced off true and bright for Engineers, and also with small Table specially adapted for Coach Makers and Wheelwrights.

Price, complete with either of above mentioned Tables . . . . .	£8 0 0
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, with Band Wheels for Steam Power and Overhead Motion complete . . .	£12 4 0
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## BENCH DRILLING MACHINES.



No. 1.—With Improved Adjustable Parallel Vice, 24 in. Fly Wheel, Handle for hand, and Fast and Loose Pulley for steam power, to drill holes up to 1 in. diameter. . . . . Price £8 5s.

No. 2.—With 36 in. Fly Wheel, for holes up to  $1\frac{3}{4}$  in. diameter . . . . . Price £12.

A Smaller Machine, similar to above, is made for holes up to  $\frac{5}{8}$  in. diameter Price £5.

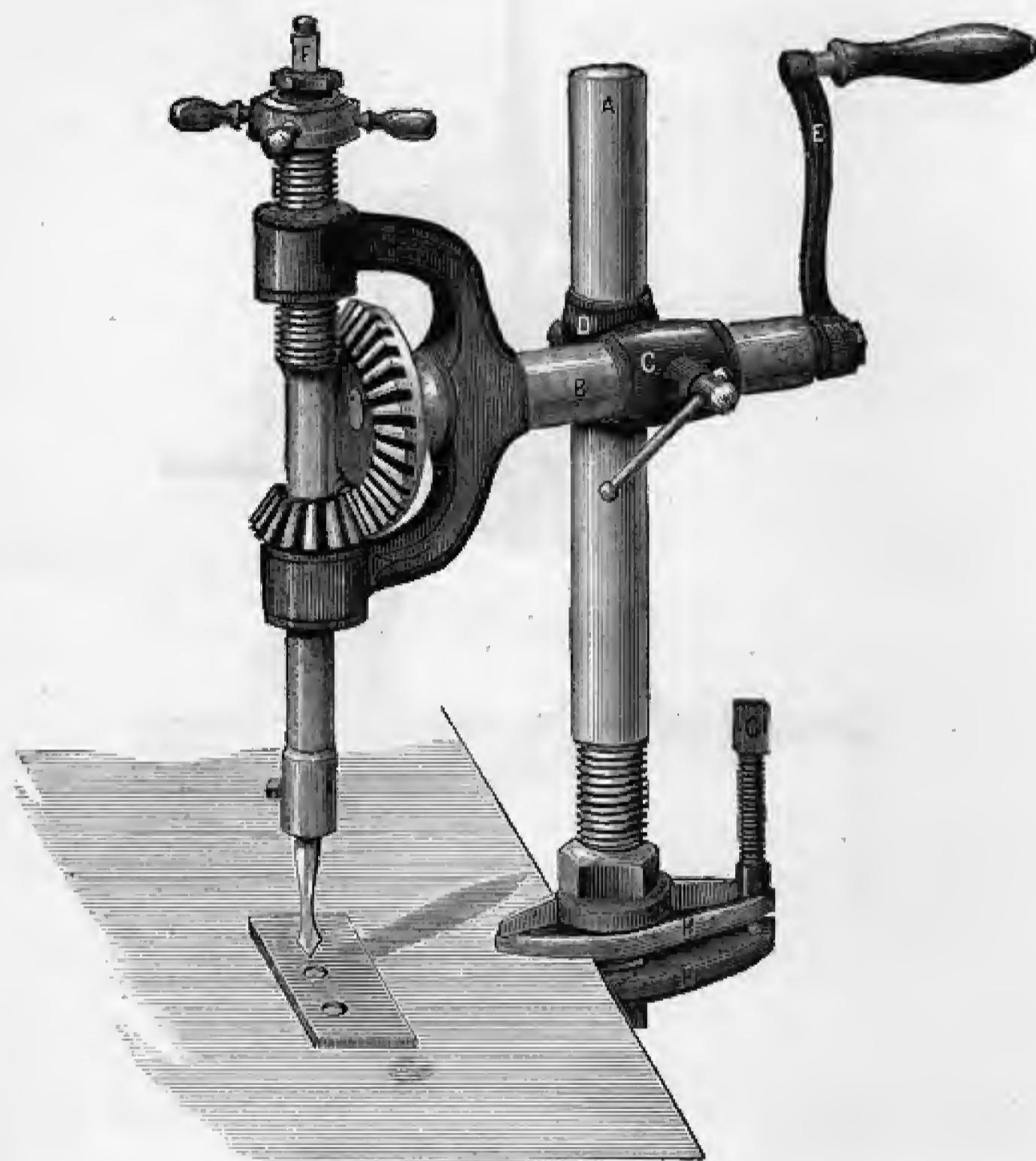
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## PATENT ANGULAR DRILLING MACHINE.

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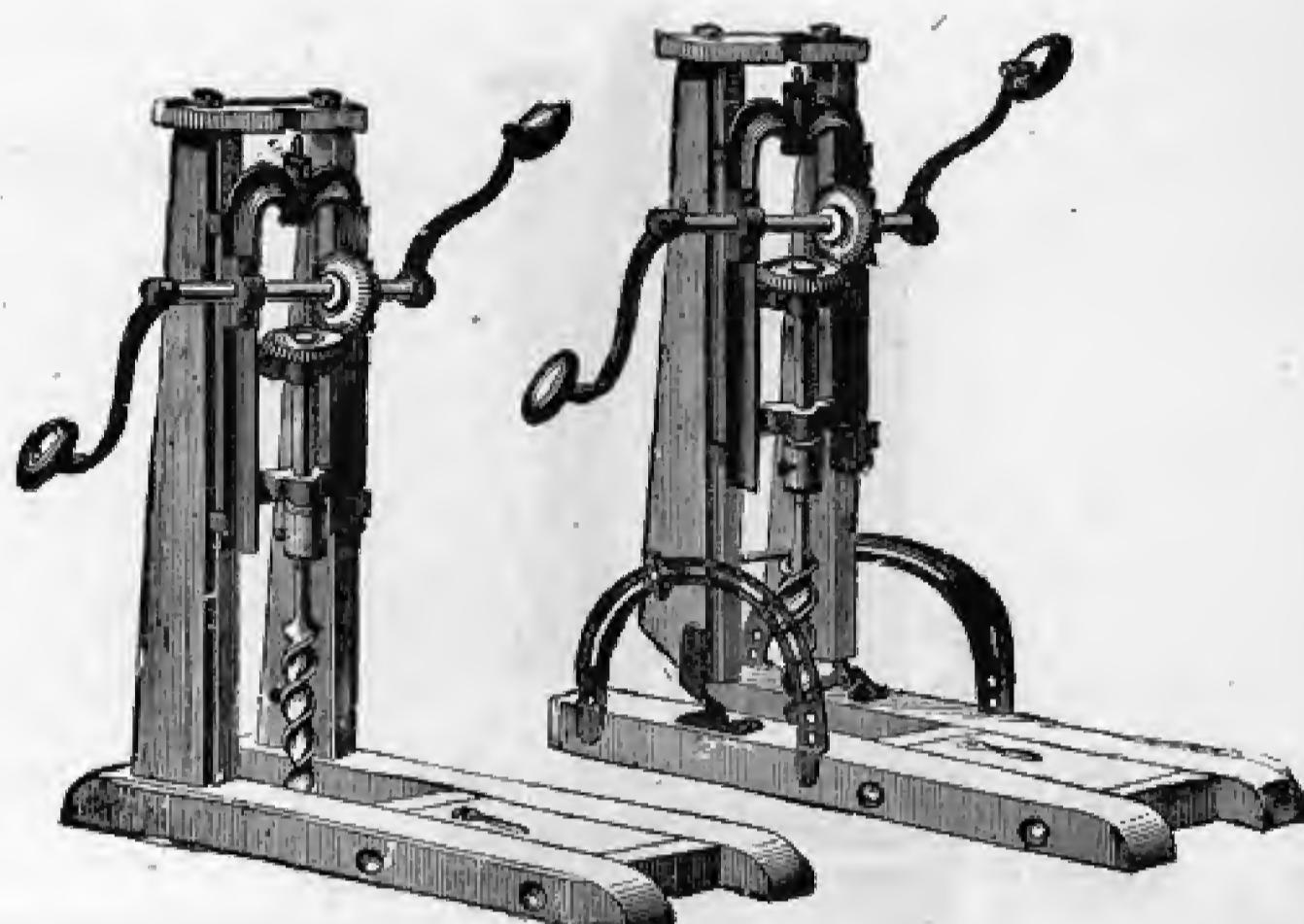
No. 1.—Shaft 20 in. long, to drill  $\frac{1}{2}$  in. hole . . . . . £6 0 0

No. 2.—,, 24 „ „ „ 1 „ „ „ £6 10 0



The Shaft A may be had either 20 in. or 24 in. high, and the Socket C being movable allows the arm carrying drill to be shifted either right or left, and the Drill to be used at any conceivable angle. The Drill may be shifted to required height by the Thumbscrew at Socket D, while the worm at head of Spindle allows it to be lowered as the hole progresses. The Crank E may be moved to Spindle F with the ratchet attachment for drilling large holes.

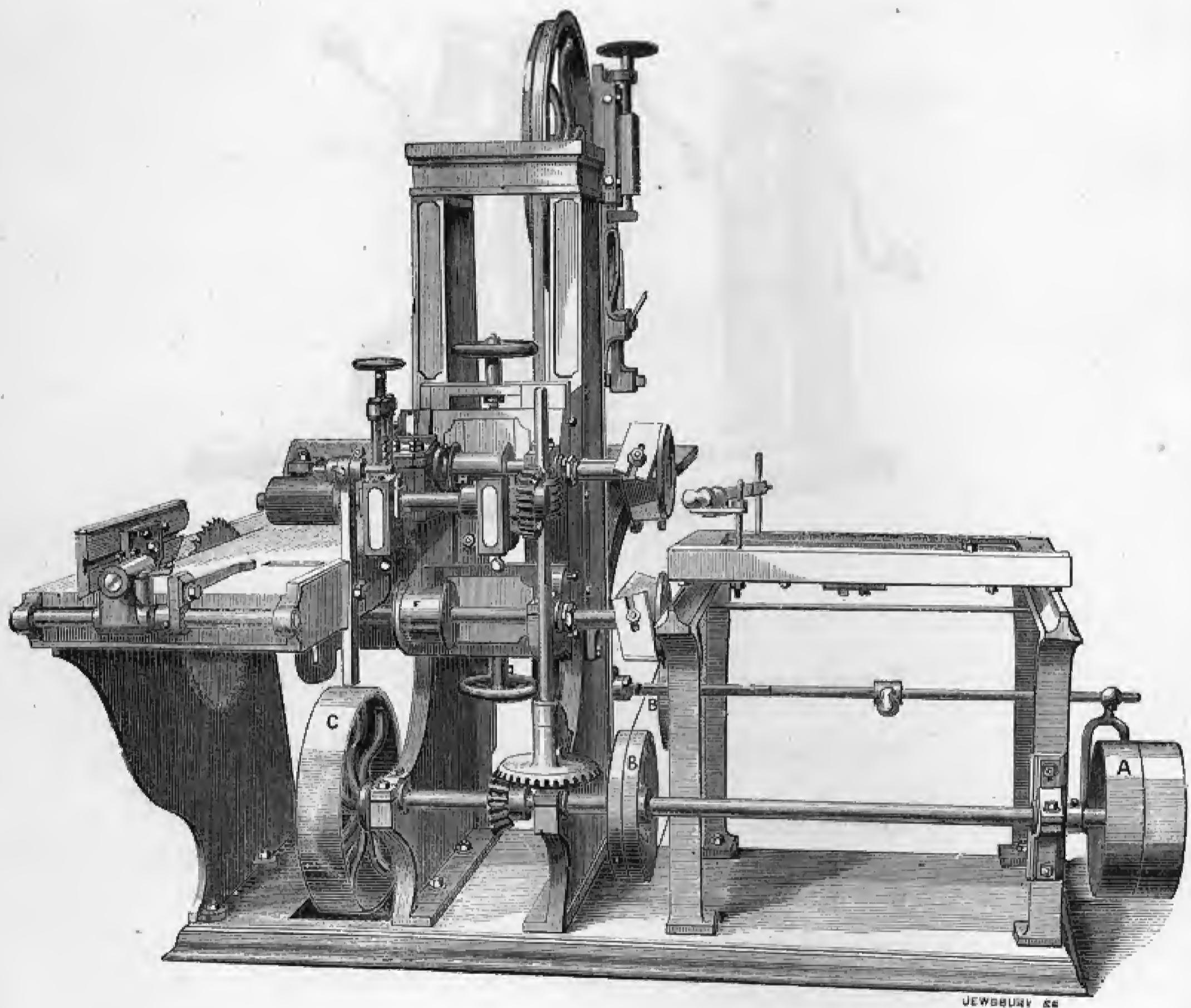
## IMPROVED BORING MACHINES.



Without Augers .. .	Price	£1 6 0
With Set of Augers, $\frac{1}{2}$ , $\frac{5}{8}$ , $\frac{3}{4}$ , $\frac{7}{8}$ , 1, $1\frac{1}{4}$ , $1\frac{1}{2}$ , $1\frac{3}{4}$ , 2 in.		£3 0 0
Angular Machine .. .		£1 16 0
With Set of Augers, as above .. .		£3 10 0

This Machine makes a perfectly straight hole with half the labour required with Hand Auger or Brace. The Augers cannot be broken as it is impossible to force them sideways when in motion. The saving of time and the accuracy gained by this Machine very soon repay the cost.

## IMPROVED GENERAL JOINER.



This Machine may be had on easy terms of payment extending over twelve months.

## IMPROVED GENERAL JOINER.

This Machine will plane or cut moulds up to 11 x 4 in. by four sets of revolving Cutters. It has a 30 in. Circular Saw for cutting twelve inches deep, with a powerful self-acting Feed Motion, and a rising and falling Motion to the Saw Spindle. The Fence Plate is made to cant over so that timber may be cut at any required bevel, and is arranged so as to turn clean off the Table out of the way when cross cutting.

The Band Saw is mounted with an improved arrangement for raising or lowering the top pulley so as to accommodate the various lengths of Saw, as it is reduced by breakage, and has a self-acting Canting Table for bevel sawing.

This Machine comprises also an apparatus for cutting circular moulds, and Tenoning apparatus, with which tenons  $4\frac{1}{2}$  in. deep may be cut at one operation. It may also be arranged for boring without extra charge. A set of Plane Irons or Grooves (viz., four  $11\frac{1}{4}$  in. and four  $4\frac{1}{4}$  in.) is supplied with the Machine, and four Counter Shafts for giving the different parts of the Machine their different required speeds.

Every part of the Machine can be worked at the same time, without interfering one with another.

Price complete .. .. .. ..	£200
Without Drag Motion to Saw .. .. .. ..	£180
Without Band Saw Apparatus .. .. .. ..	£180

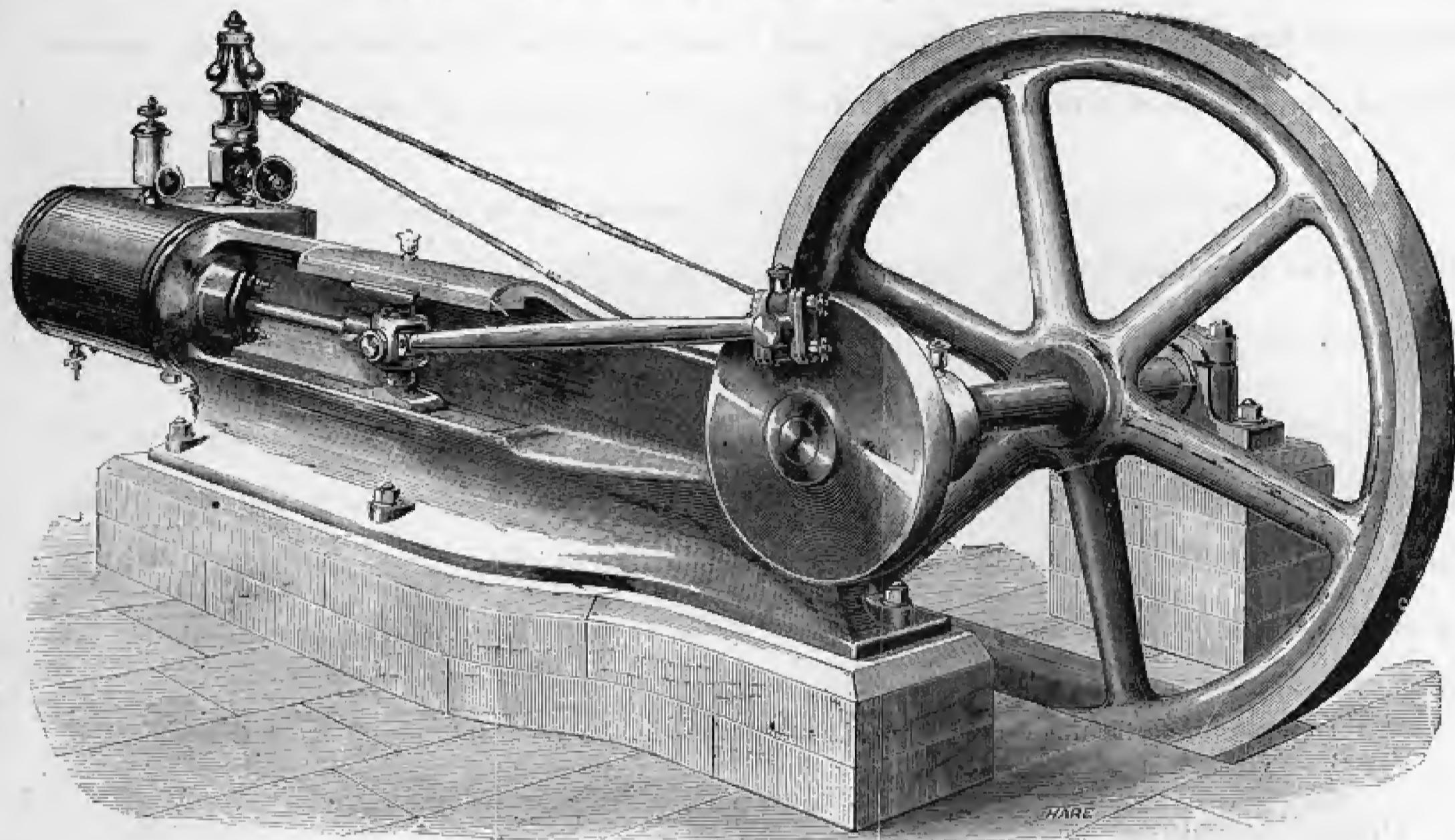
If made to plane or mould up to 7 inch wide, with self-acting Feed Motion, 21 inch Circular Saw to cut 7 inches deep, with rising motion, to saw spindle, and shifting fence for bevel cutting, one set of Plan Irons, 7 in. wide, Tenoning Irons, Band Saw, and one Counter Shaft.

Price .. .. .. ..	£120.
Without Band Saw Apparatus .. .. .. ..	£105.

For further particulars and Testimonials from Purchasers of this Machine, see end of Book.

# HORIZONTAL HIGH PRESSURE EXPANSIVE STEAM ENGINES,

With Patent High-Speed Governor.



In this Engine the working parts are considerably reduced in number, as compared with Horizontal Engines generally, rendering it far more durable and compact. The bed-plate, cylinder cover, guides, and plummer-block for crank-shaft bearing, are all cast in one piece. The cross-head slippers and connecting-rod ends are made adjustable, so that any wear can be readily removed. The fly-wheel, cylinder-end, connecting-rod, and crank-plate are all bright. All the parts are made to standard gauges, and the material and workmanship are of the highest class throughout.

The Governor is of a very special description, and combines in the small space usually occupied by the ordinary steam stop-valve, a Governor, Throttle-Valve, and Stop-Valve complete. It is exceedingly sensitive, simple, and compact.

Nominal Horse-Power .....	2	3	4	6	8	10	12	18	25
Indicated Horse Power at 50 lb. pressure in Boiler, speed 240 ft. per minute, cut off at Half-Stroke .....	3·8	5·9	8·6	15·0	19·4	23·9	34·5	45·0	60·0
Price of Engine .....	£32	£38 15	£46	£70	£90	£115	£145	£185	£200
Feed Pump, with Gun Metal Working Parts, EXTRA .....	£3	£3 15s.	£4	£5 10s.	£6	£7 10s.	£8	£10	£15
Variable Expansion Gear, EXTRA .....	...	...	£10	£12	£13	£14	£15	£16	£18
Diameter of Steam Cylinder.....	4 in.	5 in.	6 in.	8 in.	9 in.	10 in.	12 in.	14 in.	16 in.
Length of Stroke.....	8 in.	10 in.	12 in.	16 in.	18 in.	20 in.	24 in.	28 in.	28in.

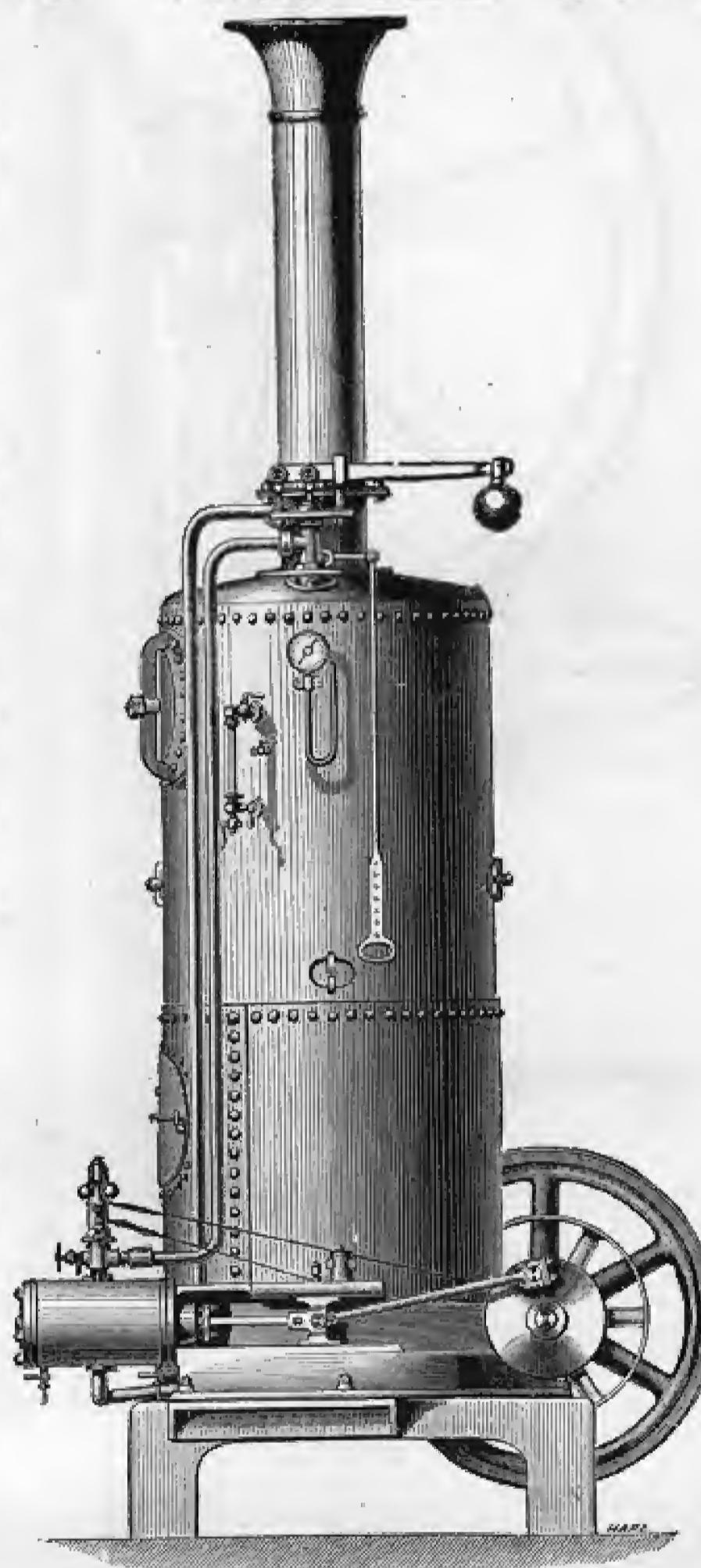
# HORIZONTAL HIGH-PRESSURE EXPANSIVE STEAM ENGINE. WITH VERTICAL BOILER.

This engraving represents a Patent High-speed Regulating Governor Steam Engine, with Vertical Boiler mounted complete on a substantial metal base plate.

The Engine is complete in itself, and with its bed plate, is entirely independent of the Boiler, which prevents all injury thereto from the strain of working, and the Engine is also uninfluenced by the contraction and expansion so much complained of in Engines having the Cylinder and other parts affixed to the Boiler. Moreover it is very compact, and lies low, thus avoiding the top-heavy shaking strains to which all Engines of the Vertical kind are more or less liable. And in the event of the Boiler requiring repairs or renewal at any time, the work can be effected at much less cost and with greater ease and facility.

The Cylinder is covered to prevent condensation of steam. The Fly Wheel is turned bright to receive strap, and the Crank Shaft is so arranged that additional driving pulleys may be fixed either inside or outside of the Fly Wheel.

A Feed Pump with gun-metal working parts is fixed to the bed-plate of the Engine. Gun-metal and steel are freely used throughout, and the Engines are finished-off bright.



The Governor is of a very special description, and combines in the small space usually occupied by an ordinary Throttle Valve, a Governor, Throttle Vale, and Stop Valve complete. It is exceedingly simple and compact, and being driven at a high speed it is very sensitive, and the working of the Engine rendered uniform under varying pressures of steam and sudden differences of load.

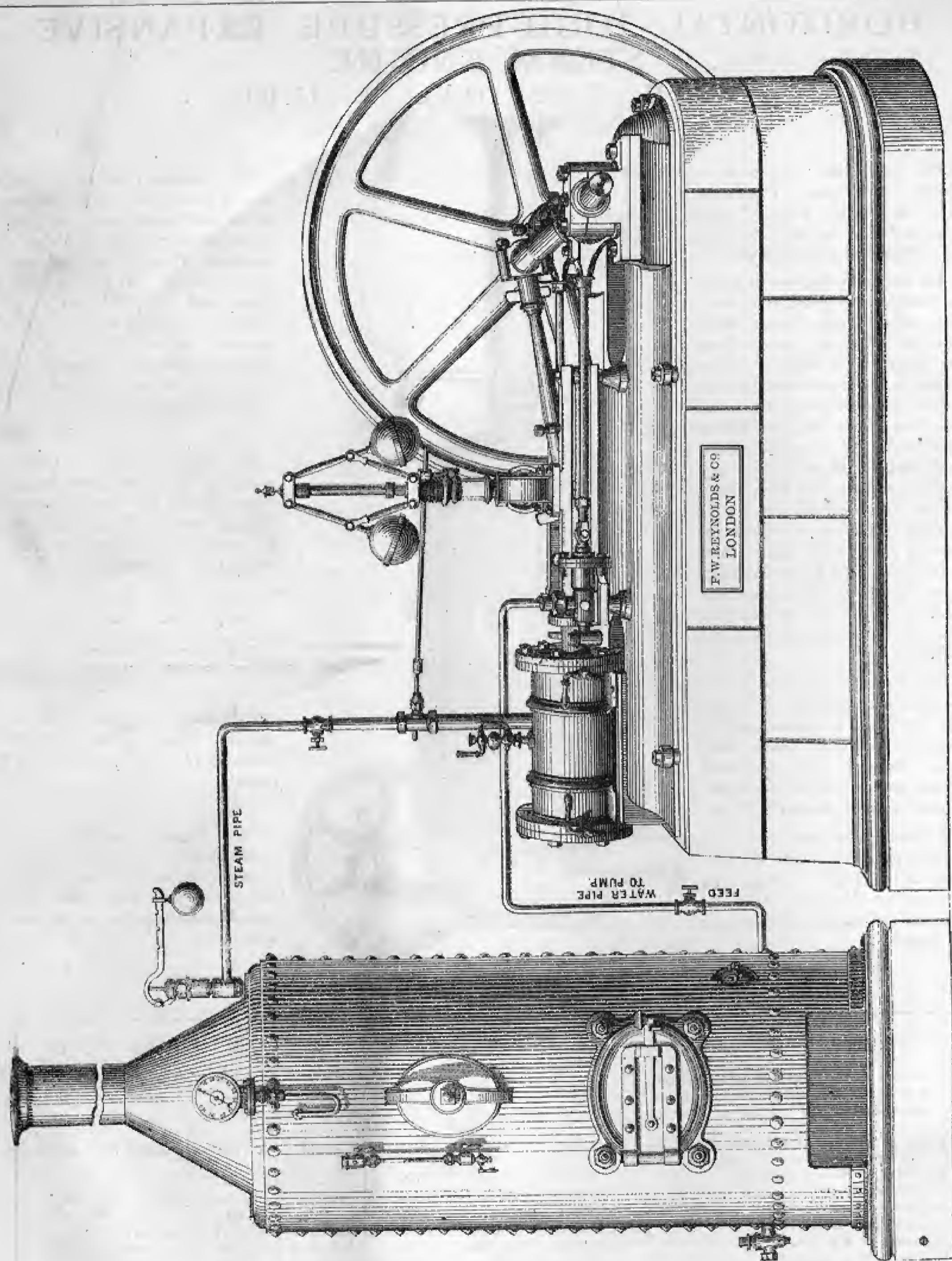
The Boiler is made of best materials, and is fitted with simple cross tubes, affording increased heating surface, without the risk and annoyance of choking up from sediment or incrustation.

The Fire box is sufficiently large for burning wood and other inferior fuel.

Each Boiler is supplied with all requisite fittings, ready for work immediately on arriving at its destination.

These Engines and Boilers are particularly well suited for shipment abroad, as the whole can be packed in a very small space, and skilled labour to erect them is quite unnecessary.

NOMINAL HORSE-POWER ... ...	2	3	4	6	8	10	12
Indicated Horse-power at 50 lb. pressure in Boiler, speed 240 ft. per minute, cut off at Half-Stroke ... ...	3·8	5·9	8·6	15·0	19·4	23·9	34·5
Price of Engine and Boiler complete	£75	£95	£110	£150	£180	£225	£280
Diameter of Steam Cylinder ... ...	4 in.	5 in.	6 in.	8 in.	9 in.	10 in.	12 in.
Length of Stroke ... ...	8 in.	10 in.	12 in.	16 in.	18 in.	20 in.	24 in.
Revolutions per minute ... ...	180	144	120	90	80	72	60
Approximate total weight ... ...	25 cwt.	35 cwt.	48 cwt.	64 cwt.	75 cwt.	86 cwt.	97 cwt.
Diameter of Fly Wheel ... ...	2 ft. 6 in.	3 ft. 3 in.	4 ft.	4 ft. 6 in.	5 ft.	5 ft. 6 in.	6 ft.
Width of Face, turned ... ...	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.



73, Southwark Street, and The Grove, London, S.E.

## IMPROVED HORIZONTAL HIGH PRESSURE STEAM ENGINE.

The Engine drawn on opposite page is constructed on the most approved principles, and in the best possible manner.

Every part is made of ample strength, and of the best materials throughout. Accurate fitting may be relied on.

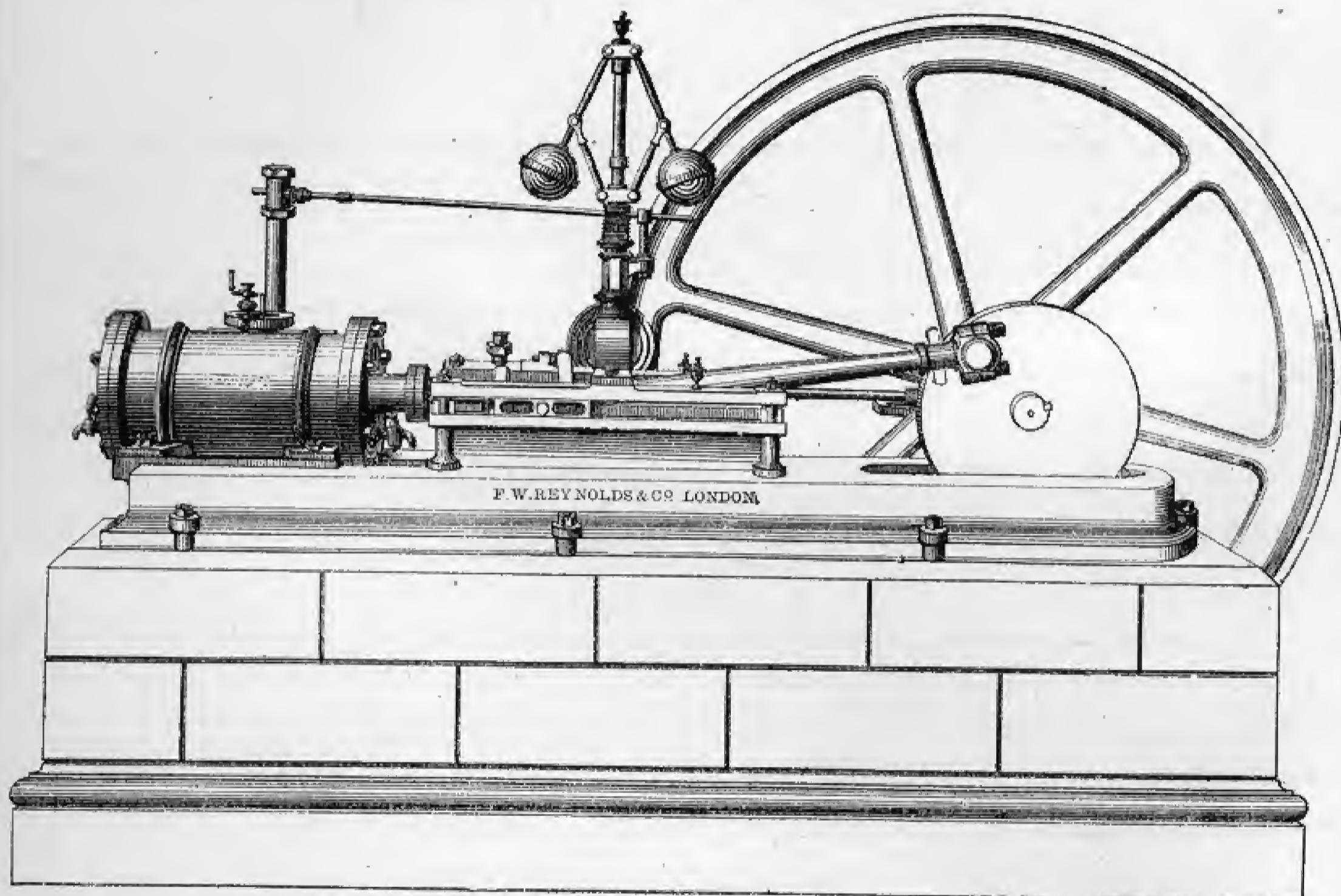
While possessing everything necessary to the efficiency of a Steam Engine, and of the greatest possible durability, it is one of the cheapest Engines made.

Nominal Horse Power .....	1	2	$2\frac{1}{2}$	3	4
Price of Engine .....	£18	£22	£24	£30	£44
Diameter of Cylinder .....	3½ in.	4½ in	5½ in.	5½ in.	6½ in.
Length of Stroke .....	7 in.	7 in.	9 in.	10 in.	11 in.
Strong Cast Iron Foundation ..	—	—	£6 15s.	£7 10s.	£8 5s.

*For larger sizes and prices of Boilers see next page.*

## IMPROVED HORIZONTAL HIGH PRESSURE STEAM ENGINE.

This Engine is substantially the same as described on previous page. It is confidently recommended as a thoroughly well made, durable, and efficient Horizontal Engine.



Nominal Horse Power .....	6	8	10	12
Price of Engine .....	£66	£88	£110	£132
Diameter of Cylinder .....	8 in.	9 $\frac{1}{2}$ in.	10 $\frac{1}{4}$ in.	11 $\frac{1}{4}$ in.
Length of Stroke .....	15 in.	15 in.	18 in.	21 in.
Strong Cast Iron Foundation .....	£11	£13	—	—

## IMPROVED VERTICAL MULTITUBULAR BOILERS.

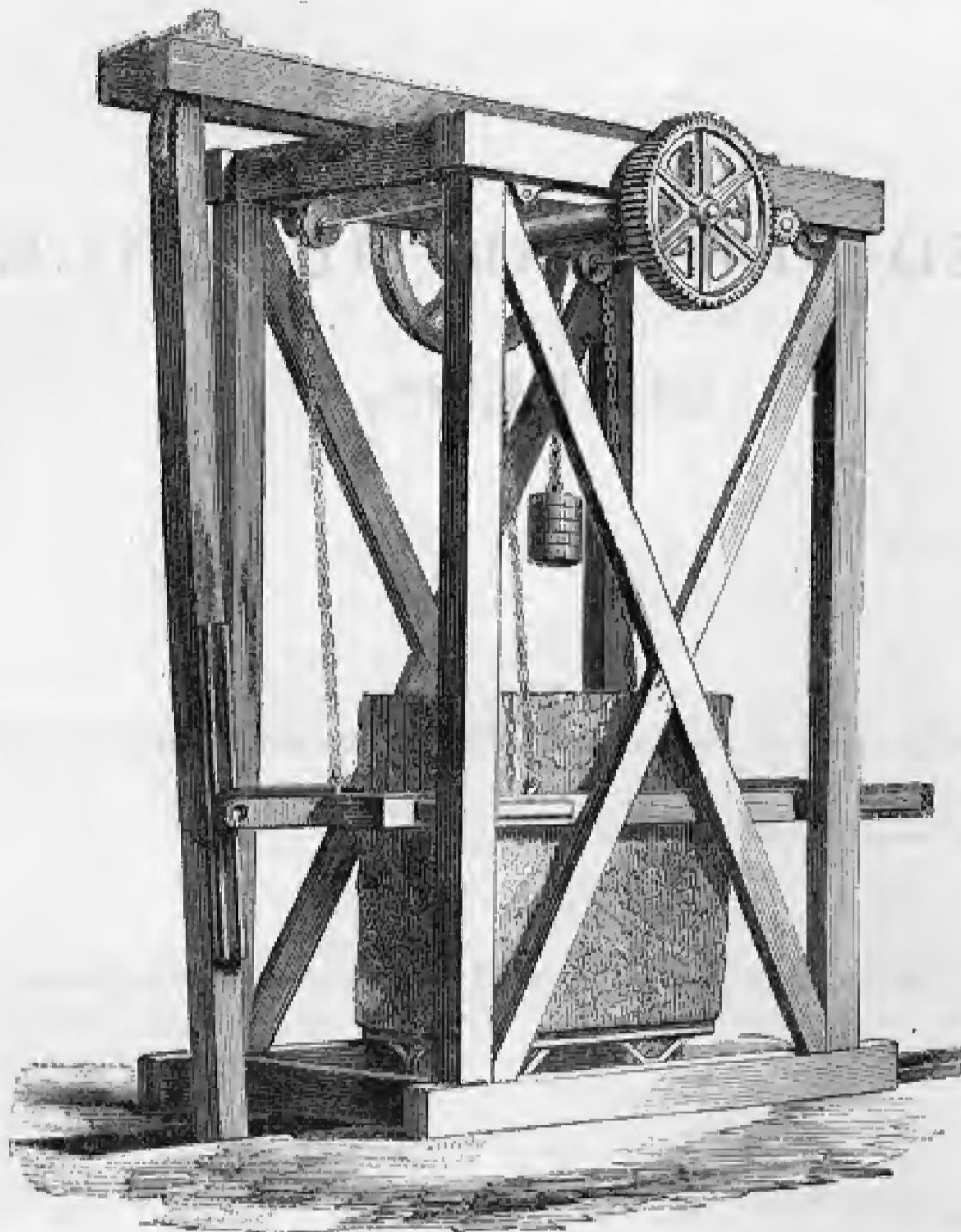
These Boilers are specially adapted for the Steam Engine before described. They are constructed in the most improved manner and of first rate materials.

They are very compact, economical in working, and will be found much cheaper than any other Boiler of the kind.

Complete with Furnace Door, Bars, Man Holes, Mud Holes, Blow-off, Steam, and Water Cocks, Glass Water Gauge, Safety Valve, and Pressure Gauge.

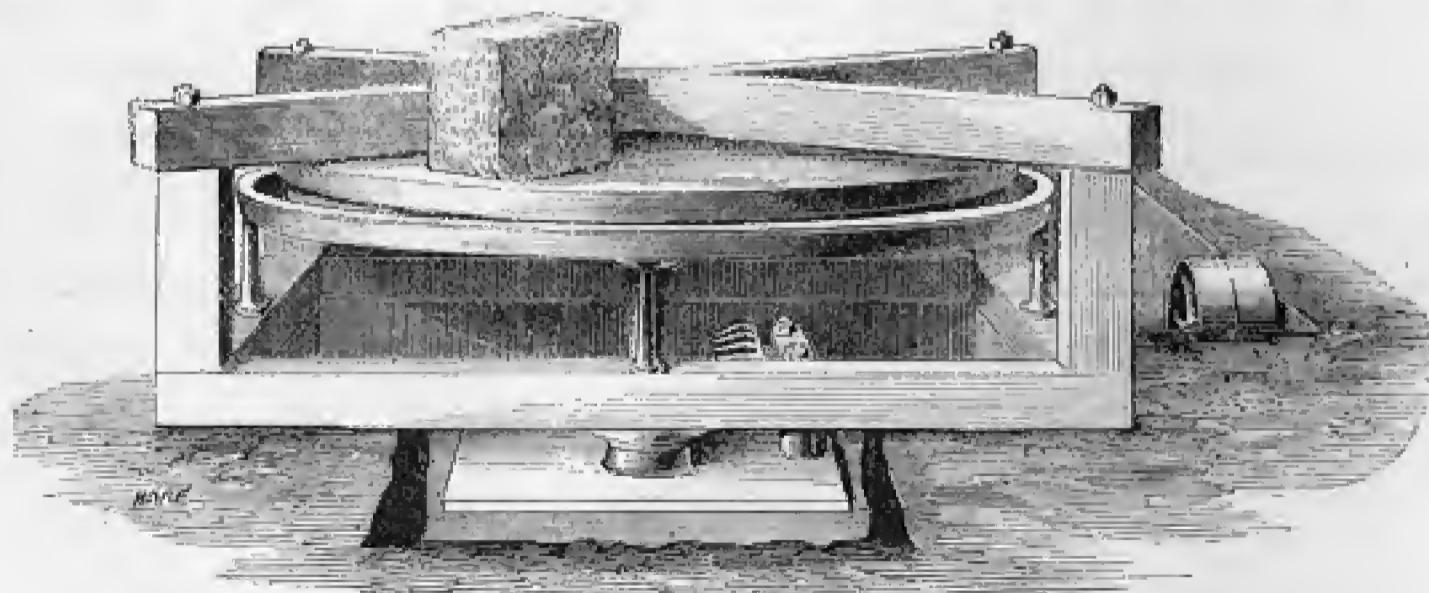
Nominal Horse Power .....	1	2	2½	3	4	6	8	10	12
Price of Vertical Boiler complete, as above described .....	£27 10	£35	£37 10	£46	£55	£80	£99	£116	£136
Height of Boiler.....	3 ft. 8 in.	4 ft. 8 in.	5 ft. 6 in.	5 ft. 6 in.	6 ft.	8 ft.	9 ft.	10 ft.	12 ft.
Diameter ,,, .....	1 ft. 8 in.	2 ft.	2 ft.	2 ft. 4 in.	2 ft. 11 in.	3 ft. 2 in.	3 ft. 6 in.	4 ft.	4 ft.
Number of Tubes .....	7	7	8	10	12	16	20	24	30

## STONE SAWING MACHINE.



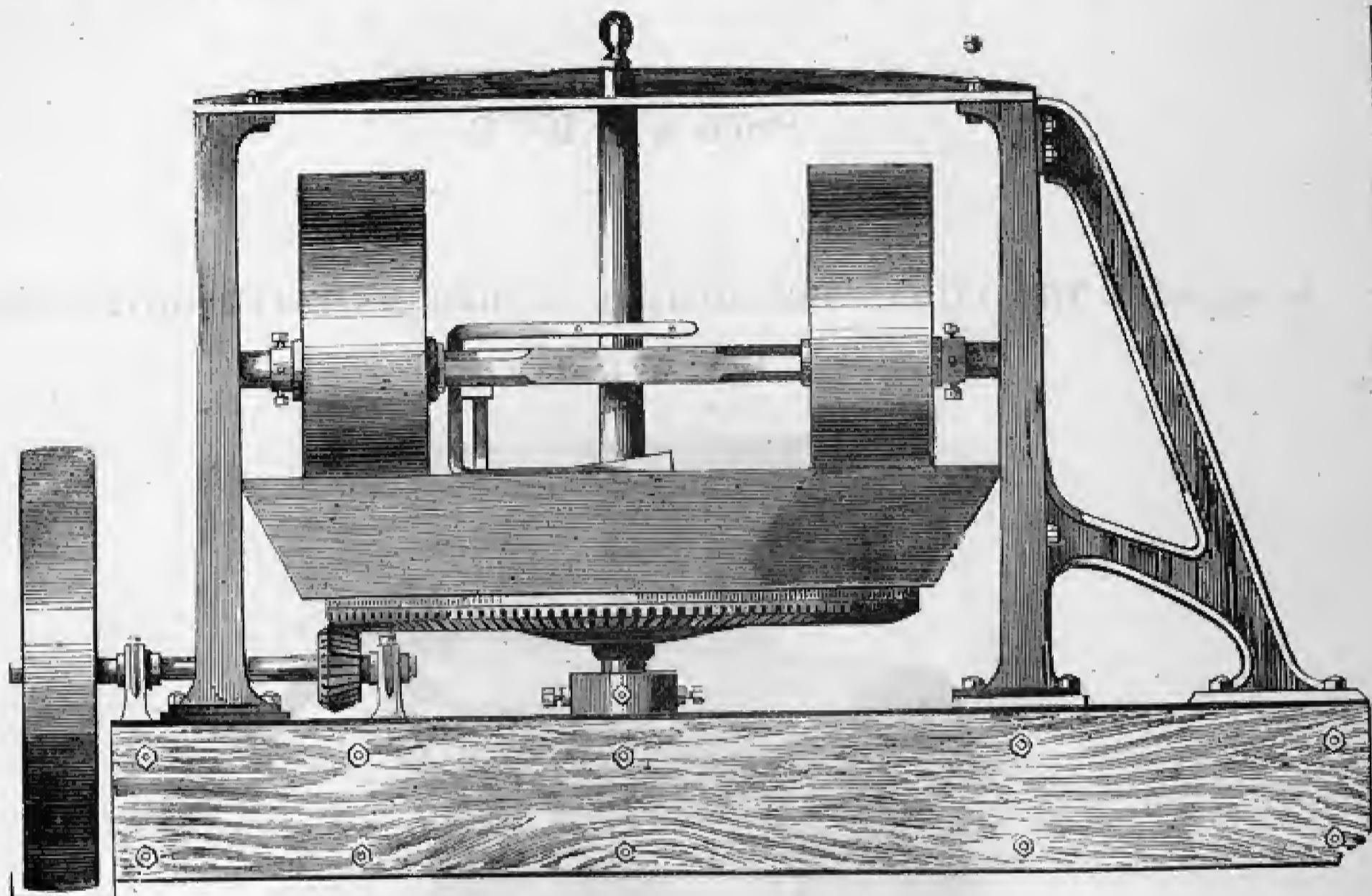
Price of Iron Work for above consisting of Cast Iron Side Frames, Guides, and Blocks, upright Straining Bars, Bottom Shaft with fast and loose Pulleys and Fly Wheel, Saws, Hauling Wheel and Gear, Chain Barrel, Pulleys, Wheel and Balance Weights, may be had on application.

## STONE RUBBER OR POLISHING MACHINE.



Price of Iron Work complete for above on application.

## MORTAR OR LOAM MILL.



The Pan is fitted with loose bottom in segments, and is keyed on the vertical shaft, which has a steel toe working on suitable bottom bearing, and is made to rotate by the gear below.

Prices, with Scrapers and Iron Rollers, complete:—

5 ft. Pan	..	..	..	..	£52	10	0
6 ft.	..	..	..	..	£65	0	0
7 ft.	..	..	..	..	£85	0	0
7 ft. 6 in.	..	..	..	..	£92	10	0
9 ft.	..	..	..	..	£125	0	0

Timber Bed and Driving Pulleys not included.

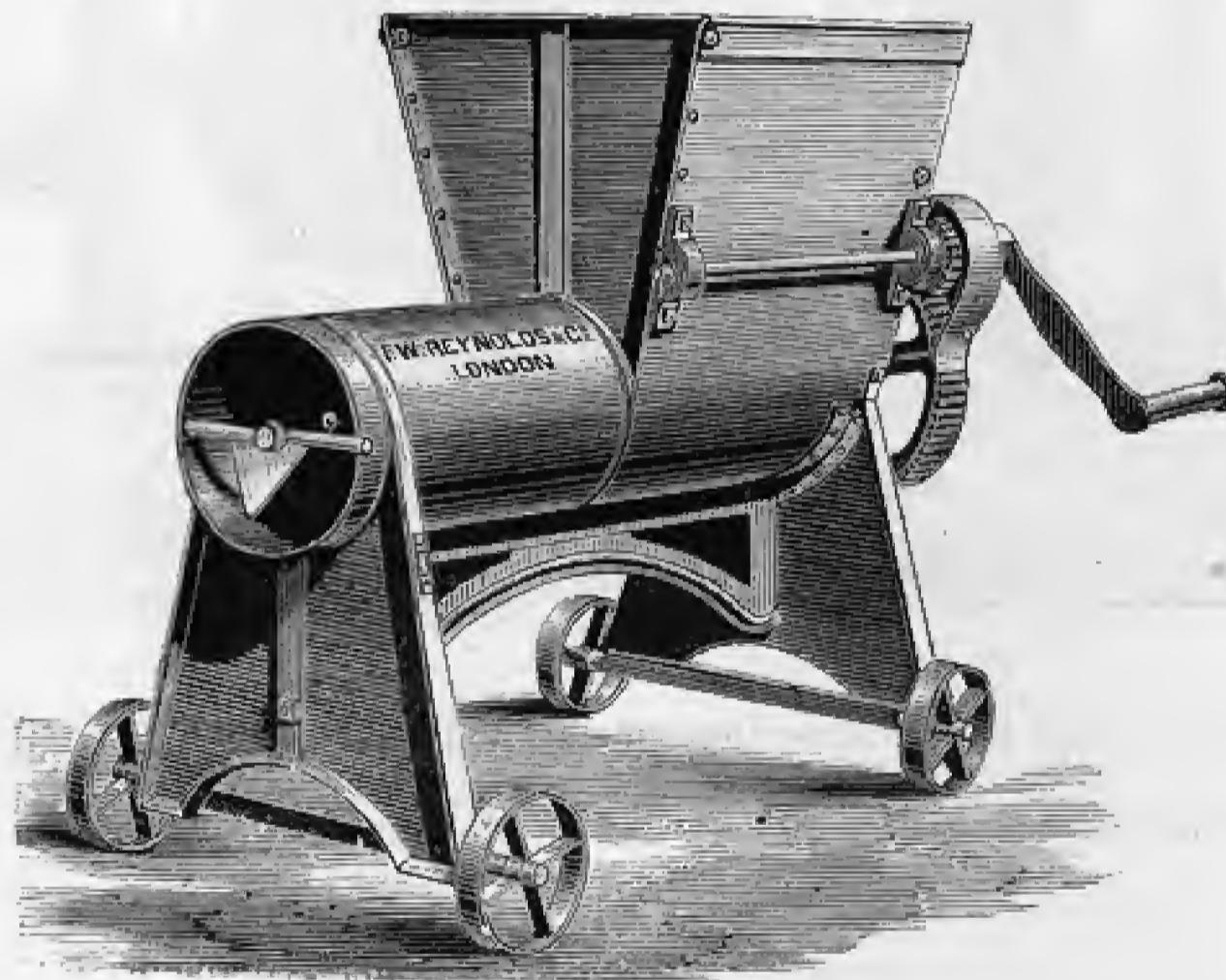
*May be had with Granite Rollers if required.*

**"THE LONDON"**  
**HAND POWER MORTAR MIXING MILL.**

Price £10 10 0.

As supplied to THE INDIAN DEPARTMENT OF HER MAJESTY'S GOVERNMENT

by F. W. R. & Co.



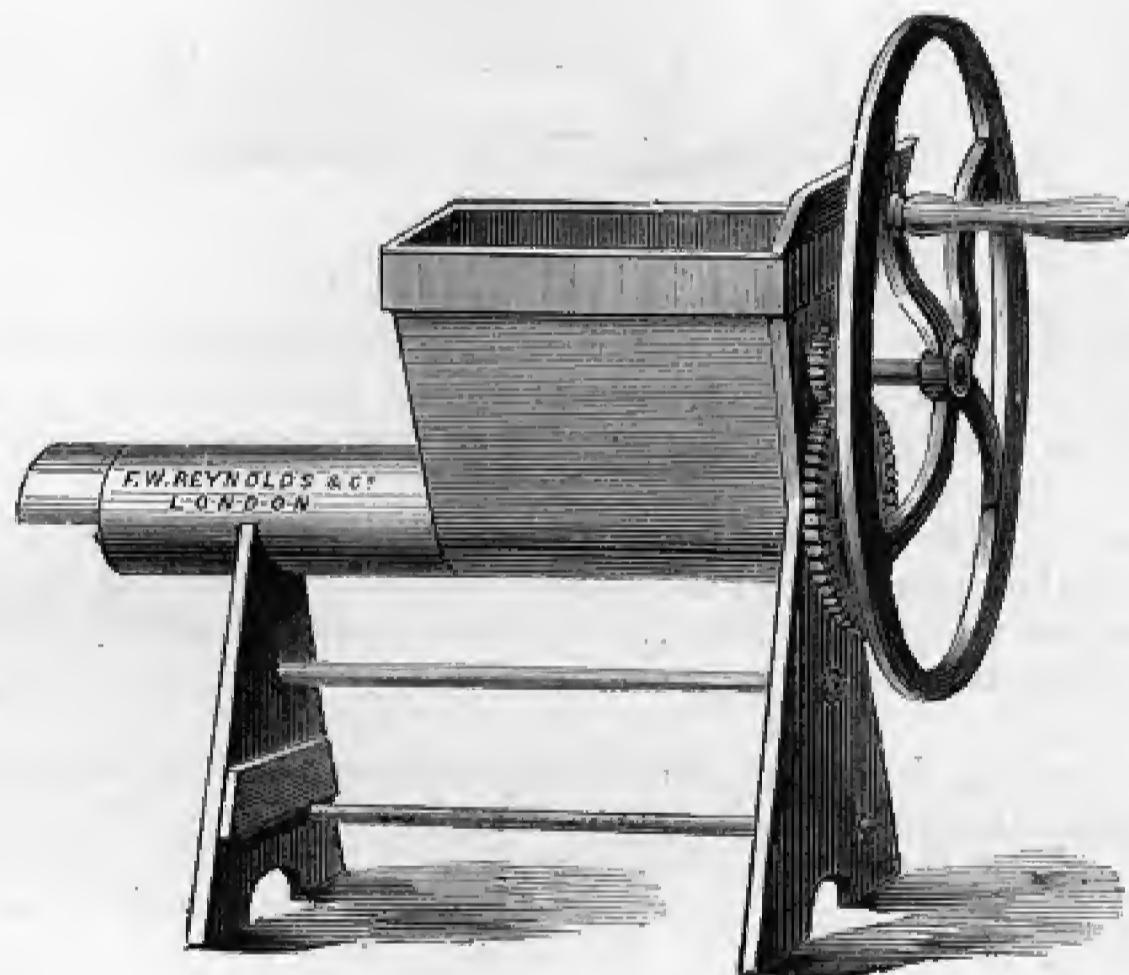
By this Mill the mortar is thoroughly and efficiently mixed, with the minimum expenditure of labour.

The Hopper being filled with the materials, the spindle in centre of Cylinder having 14 Wrought Blades is set in motion by the handle, and the mortar is ready for use when discharged from the outlet. The mortar is mixed in this Mill more thoroughly than with shovels, and at a much less expense. One boy can mix enough to keep eight men at work, one man twenty men.

It is constructed wholly of iron, and being mounted on wheels is easily shifted about. The blades or knives are attached with nut and screw and can be easily removed for repairs if required.

## HAND POWER MORTAR MIXING AND TEMPERING MILL.

Price £9 9s.

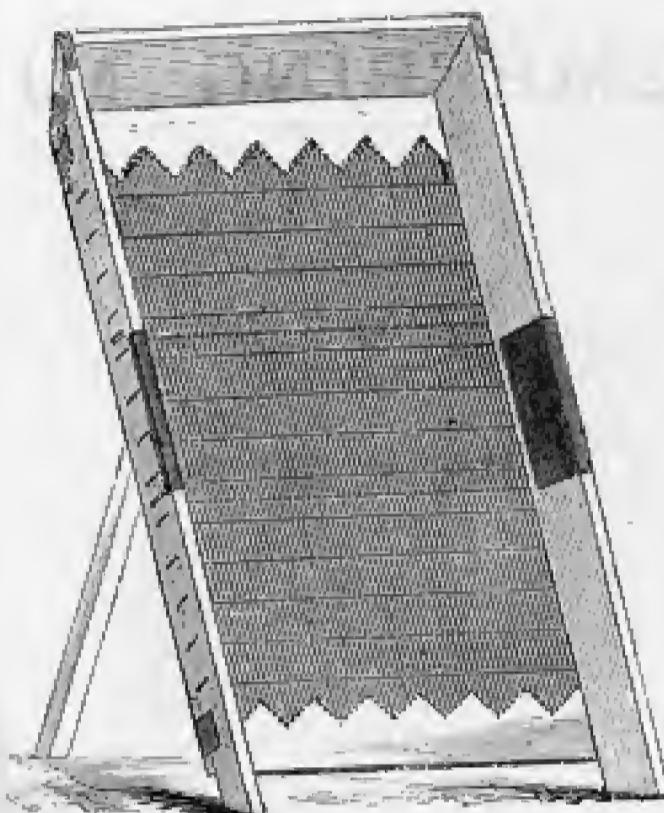


This is a cheaper Mill than the "London," being without wheels and having wood ends to Hopper. The blades or knives for mixing are cast, but are mounted in same way as in the "London."

For Mixing and Tempering Mortar, Cement, and Plaster this Mill will be found most useful.

## PATENT MACHINE MADE BUILDERS' SCREENS.

### NO LACING WIRE.



This invention has supplied the long-felt want of a more durable and stronger kind of Wirework for Sieves and Screens, than the ordinary laced variety in common use; it consists in passing the round longitudinal wire through holes drilled in flat cross-bars, instead of tying them to round cross-bars with small wire.

A trial of twelve months' duration, at some of the largest works in the country, has convinced Contractors and others of the superiority of the Patent Screens, over the old tied description; and the success with which the invention has met, proves that for durability and strength, combined with cheapness, the new Screens surpass any yet manufactured.

Since the first patent was taken out, several improvements have been introduced. The chief of these are, perhaps, (1) drilling the holes nearer the edge of the flat cross-bars, (2) widening the cross-bars; by these means there is no projection on the surface of the Screen, it presents a comparatively smooth surface, and there is a greater breadth of metal behind the holes, where it is more needed than in front.

Referring to the annexed List, it will be seen that a very considerable reduction in the prices quoted has been effected. Increased demand has necessitated increased facilities for production; extensive machinery has been erected, and a further subdivision of labour introduced; indeed, a comparison of Lists will show that the new prices are now from 5 to 25 per cent. *cheaper* than those charged for *ordinary Screens*.

The merits claimed for the new Wirework in its application to Screens, Sieves, &c., and for which it is preferred to the old-fashioned tied work, are—

- (1.) ITS MATHEMATICAL REGULARITY OF MESH.
- (2.) ITS GREATER STRENGTH AND DURABILITY.
- (3.) ITS CHEAPER PRICE.

PATENT MACHINE-MADE BUILDERS' SCREENS  
AND GRAVEL SIEVES.

MESH.	4 ft. 6 in. x 2 ft. 6 in.		5 ft. x 2 ft. 6 in.		5 ft. x 2 ft. 9 in.		5 ft. 6 in. x 2 ft. 9 in.		5 ft. 6 in. x 3 ft.		6 ft. x 2 ft. 9 in.		6 ft. x 9 ft.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
$\frac{7}{8}$ , $\frac{5}{8}$ , & $\frac{9}{16}$ -inch .. .	16	10	18	6	19	8	21	6	23	0	24	0	25	4
$\frac{1}{2}$ , $\frac{7}{16}$ , & $\frac{3}{8}$ -inch .. .	18	0	19	8	21	0	23	0	24	6	25	4	27	0
$\frac{5}{16}$ , $\frac{1}{4}$ , & $\frac{3}{16}$ -inch .. .	19	6	21	2	22	6	24	6	26	0	26	10	28	4
$\frac{5}{32}$ -inch .. .	22	10	25	3	26	6	27	8	28	10	31	3	33	8
$\frac{1}{8}$ -inch .. .	25	10	28	10	30	0	32	6	33	8	36	0	38	6
Galvanizing extra .. .	2	5	2	9	3	0	3	4	3	8	4	3	4	10

STRAIGHT GRAVEL SIEVE, Laced, 3 feet Deep.

The Hoops and Wire in these Sieves are extra stout and of best quality.

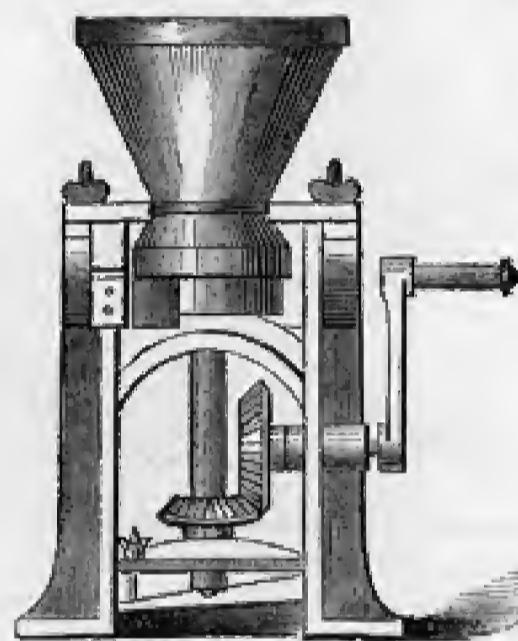
DIAMETER.	3-16th in.	$\frac{1}{4}$ -in.	5-16th in.	3-8th in.	$\frac{1}{2}$ in.	5-8th in.	$\frac{1}{4}$ in.	
	s.	d.	s.	d.	s.	d.	s.	d.
20 .. .	3	6	3	6	3	4	3	3
22 .. .	4	0	4	0	4	0	3	6
24 .. .	4	7	4	7	4	6	4	6

# IMPROVED PAINT GRINDING AND MIXING MILLS.

"THE UNIVERSAL," 17s. 6d.      "THE BRUNSWICK" GRINDING MILL.



No. 1	..	..	£2	0	0
No. 2	..	..	2	12	6
No. 3	..	..	3	12	0
No. 4	..	..	10	15	0



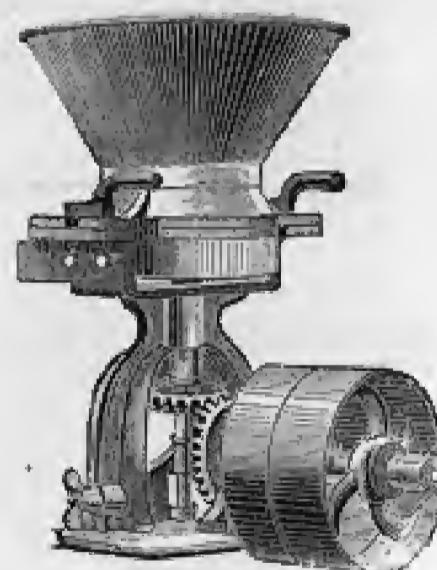
"THE CLIMAX."

No. 1	..	..	£2	10	0
No. 2 (with Fly Wheel)	..	..	4	0	0



"THE CLIMAX."

No. 3	..	..	£5	10	0
No. 5	..	..	25	0	0



The Grinding surfaces are prepared by Machinery, and each mill is tested before leaving the works. Painters, Coach Builders, and Blind Makers will find these mills specially adapted for their requirements.

## IMPROVED PAINT GRINDING AND MIXING MILLS.

### PATENT MULTIPLIED SURFACE GRINDING MILL.

No. 1 .. ..	£2 2 0
No. 2 .. ..	£3 3 0



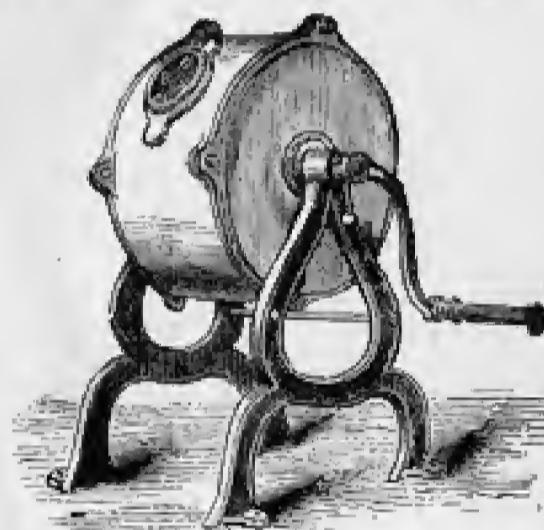
### CYLINDRICAL GRINDING MILL.

Price £5 10 0

With Two Chambers for grinding as many colours at the same time.

Price £9.

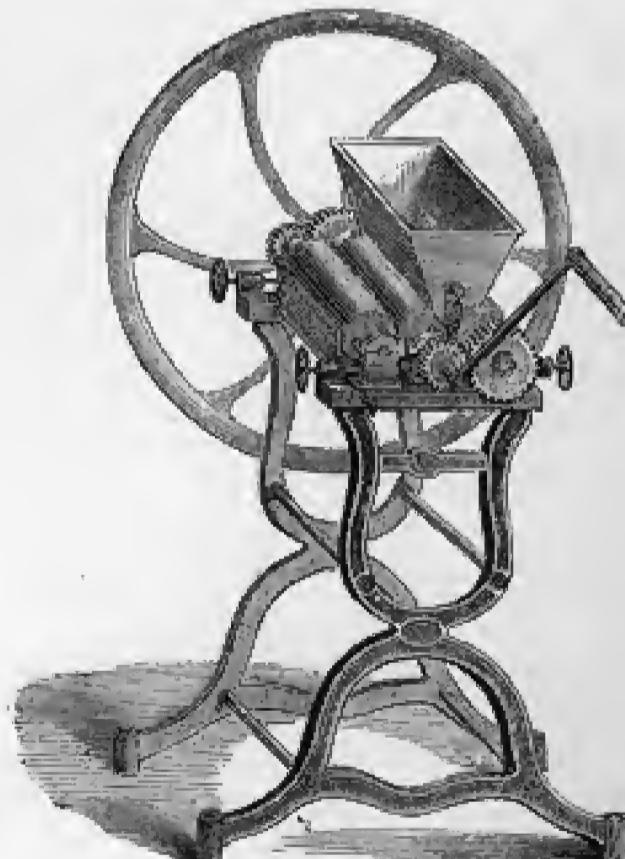
Prices of larger sizes upon application.



### PAINT GRINDING MILLS FOR MANUFACTORIES, &c.



For Hand Power .. . . Price £23  
,, Steam , , , , , £28



For Hand Power .. . . Price £32  
,, Steam , , , , , £39

## MOUNTED GRINDSTONES.

In Iron Troughs, with Wrought Iron Legs, and Treadle complete.



### PRICES.

14 in diameter	..	..	..	..	..	£1	2	6
16 " "	..	..	..	..	..	1	6	0
18 " "	..	..	..	..	..	1	9	0
20 " "	..	..	..	..	..	1	14	0
22 " "	..	..	..	..	..	1	17	0
24 " "	..	..	..	..	..	2	2	0

Handles for above, 2s. each extra.

Best Derbyshire Peak, Bilston, Blue Grit, Newcastle, and Yorkshire Grindstones all sizes.

Prices on application.

STRONG WROUGHT IRON FRAME MOUNTED  
GRINDSTONES.



18 in. diameter	..	..	..	..	£2 9 0
20 „ „	..	..	..	..	2 11 0
22 „ „	..	..	..	..	2 12 6
24 „ „	..	..	..	..	2 14 6
30 „ „	..	..	..	..	4 6 0
36 „ „	..	..	..	..	5 15 0

With two Handles and Galvanized Iron Trough 10 per cent. extra.

Best Derbyshire Peak, Bilston, Blue Grit, Newcastle, and Yorkshire Grindstones all sizes.

Prices on application.

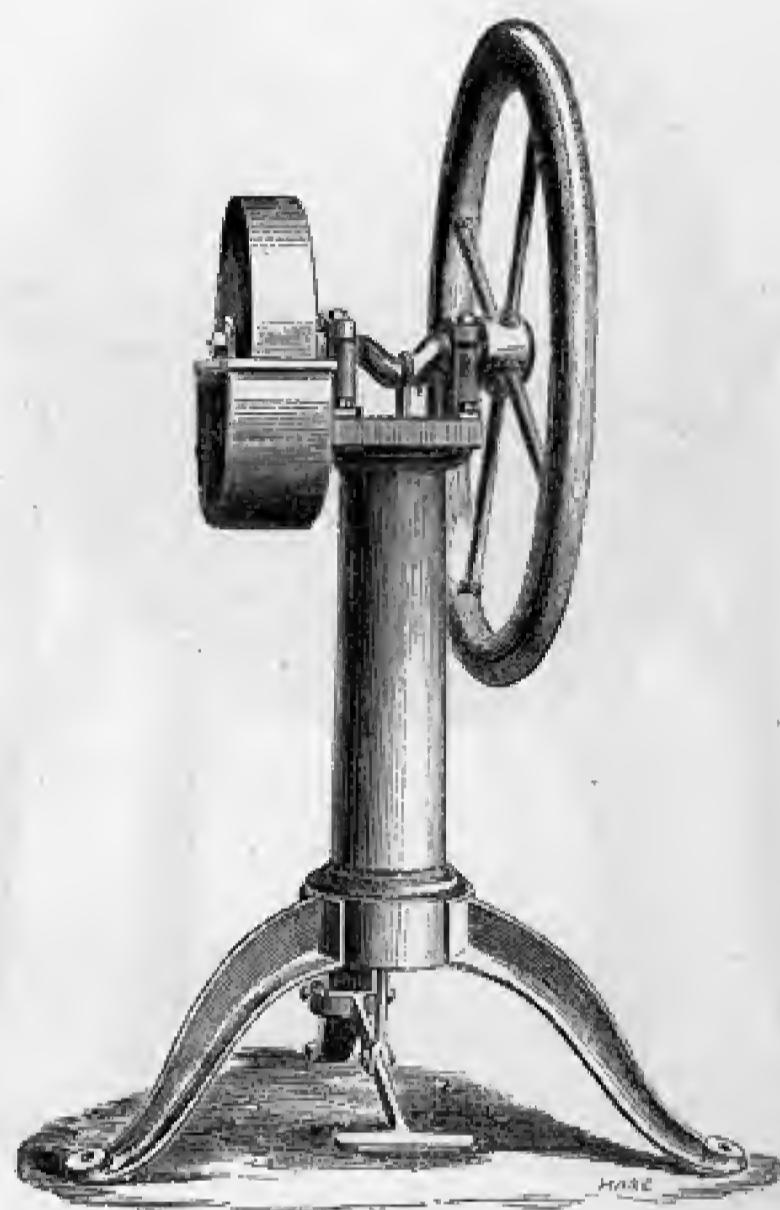
## THE PEDOMOTIVE GRINDSTONE.

No. 1.

Price - £2 5 0

No. 2.

Price - £3 0 0



This Grindstone is by many preferred to those with winch handle. It occupies little space, being very compact, and requires only one to work it. It is mounted on a strong iron stand, thoroughly well made throughout.

Best Derbyshire Peak, Bilston, Blue Grit, Newcastle, and Yorkshire Grindstones, all sizes.

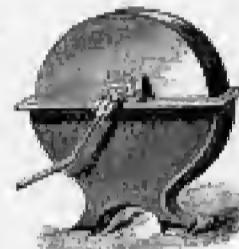
Prices on application,

73, Southwark Street, and The Grove, London, S.E.

## THE "IXION" GRINDSTONE.

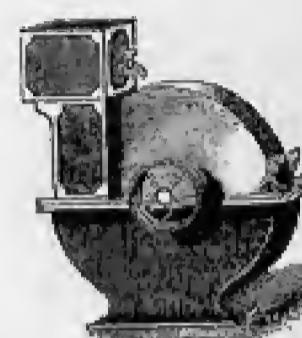
With Cast Iron Troughs of Improved pattern.

No. 4.



Trough and Stone fitted.

No. 8.



Trough and Stone fitted with Water Cistern and Tool Rest.

## SIZES AND PRICES.

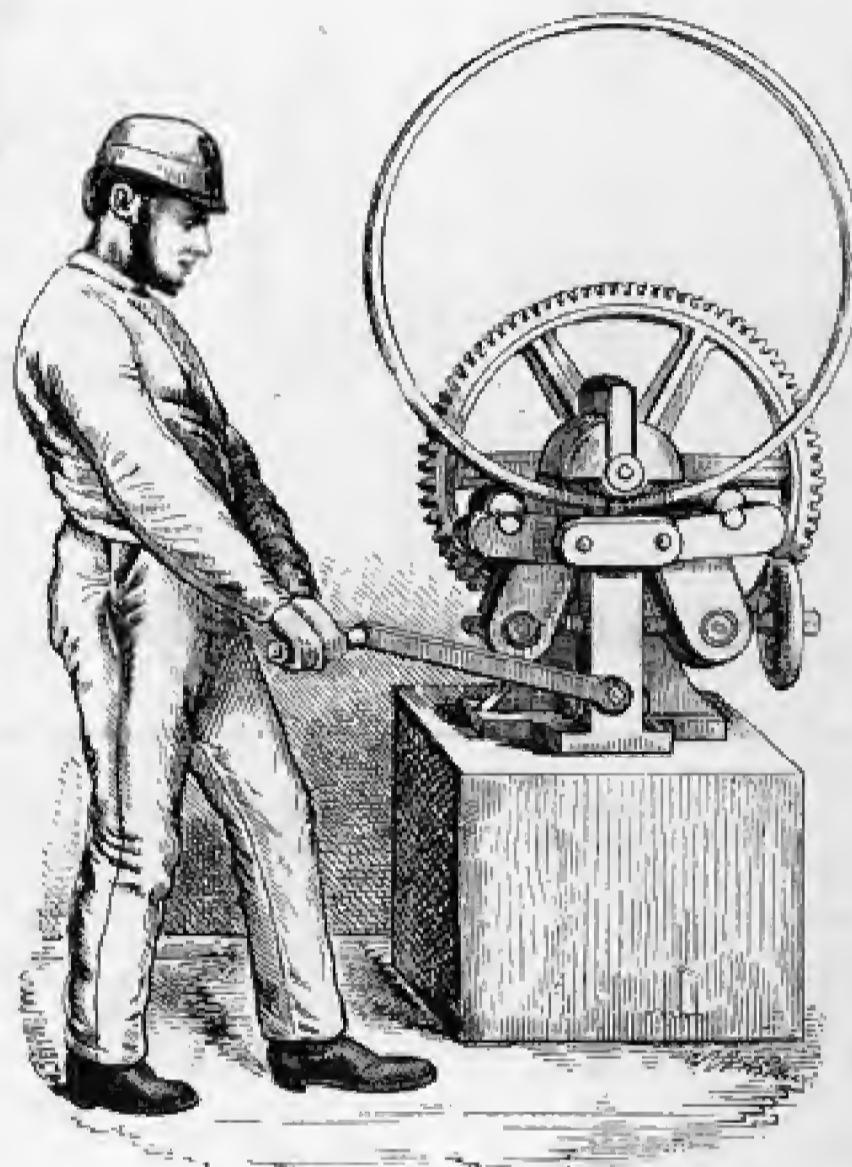
No. of Trough.	Size of Trough.	Width of Stone.	Trough fitted with Stone complete.	Trough Fittings only.	Extra for Water Cistern and Tool Rest.	Extra for each Pulley.
1	2 ft. 2 in. by 4½ in.	3½	£2 15 0	£2 2 6	12 6	5 6
2	2 „ 8 „ „ 5½ „	4	3 12 6	2 15 0	15 0	7 0
3	3 „ 2 „ „ 5½ „	4	4 12 6	3 7 6	17 0	10 0
4	3 „ 3 „ „ 6½ „	4½	5 7 6	3 17 0	18 6	10 0
5	3 „ 8 „ „ 6 „	4½	5 15 6	4 0 0	18 6	11 0
6	2 „ 8 „ „ 7 „	5	4 17 9	3 15 6	20 0	11 0
7	3 „ „ „ 8 „	5½	6 0 0	4 4 0	23 0	11 0
8	3 „ 6 „ „ 9 „	6	7 10 6	4 17 6	25 0	12 6
9	4 „ „ „ 10 „	7	8 18 6	5 10 0	30 0	13 0

Best Derbyshire Peak, Bilston, Blue Grit, Newcastle, and Yorkshire Grindstones, all sizes.

Prices on application.

## IMPROVED TIRE BENDING MACHINE.

Price £5 0 0

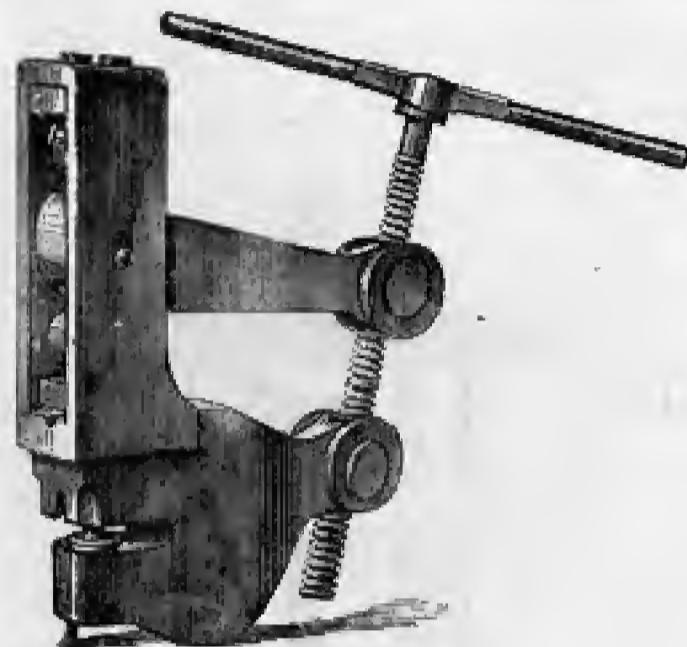


This Machine comprises three Rollers in one Frame, set in position by a Double Acting Screw. A bar of iron can with this Machine be bent to any required sweep with much greater accuracy than by any other method. After welding, a tire may be replaced between the Rollers without removing any part of the Machine.

This Tire Bender is recommended to Coach Builders and Wheelwrights as the best Machine made for the purpose.

Prices of Axles, Cart Arms, Cranks, and Carriage Springs on application.

# PATENT LEVER PUNCHING BEAR.



No. 1.—For punching holes $\frac{9}{16}$ in. diameter .. .	..	..	£5 0 0
„ 2 „ „ $\frac{11}{16}$ „ „ ..	..	..	7 10 0
„ 3 „ „ $\frac{13}{16}$ „ „ ..	..	..	10 10 0
„ 4 „ „ $\frac{7}{8}$ „ „ ..	..	..	12 0 0
„ 5 „ „ 1 „ „ ..	..	..	14 0 0

**These Punching Bears** are made of the best quality Wrought Iron and the Finest Cast Steel.

## CLOSE MOUTHED PUNCHING BEAR,

### For Iron or Steel Rails.

To punch oblong hole,  $1\frac{1}{2}$  in. diameter. . . . . Price £30 0 0

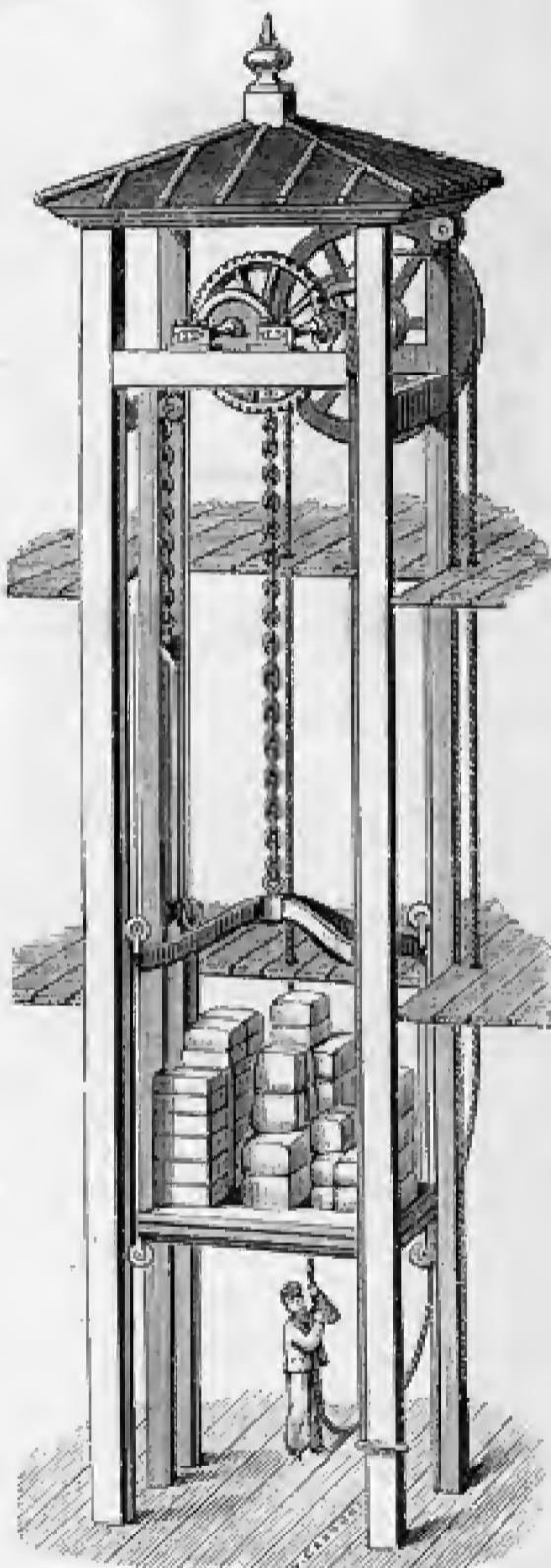
73, Southwark Street, and The Grove, London, S.E.

## IMPROVED WAREHOUSE LIFT.

CELLAR HOISTS AND  
LIFTS.

DINNER LIFTS,

For Hotels, Club Houses, and  
Mansions.



HYDRAULIC LIFTS,

For Warehouses, Docks, Hotels, &c.

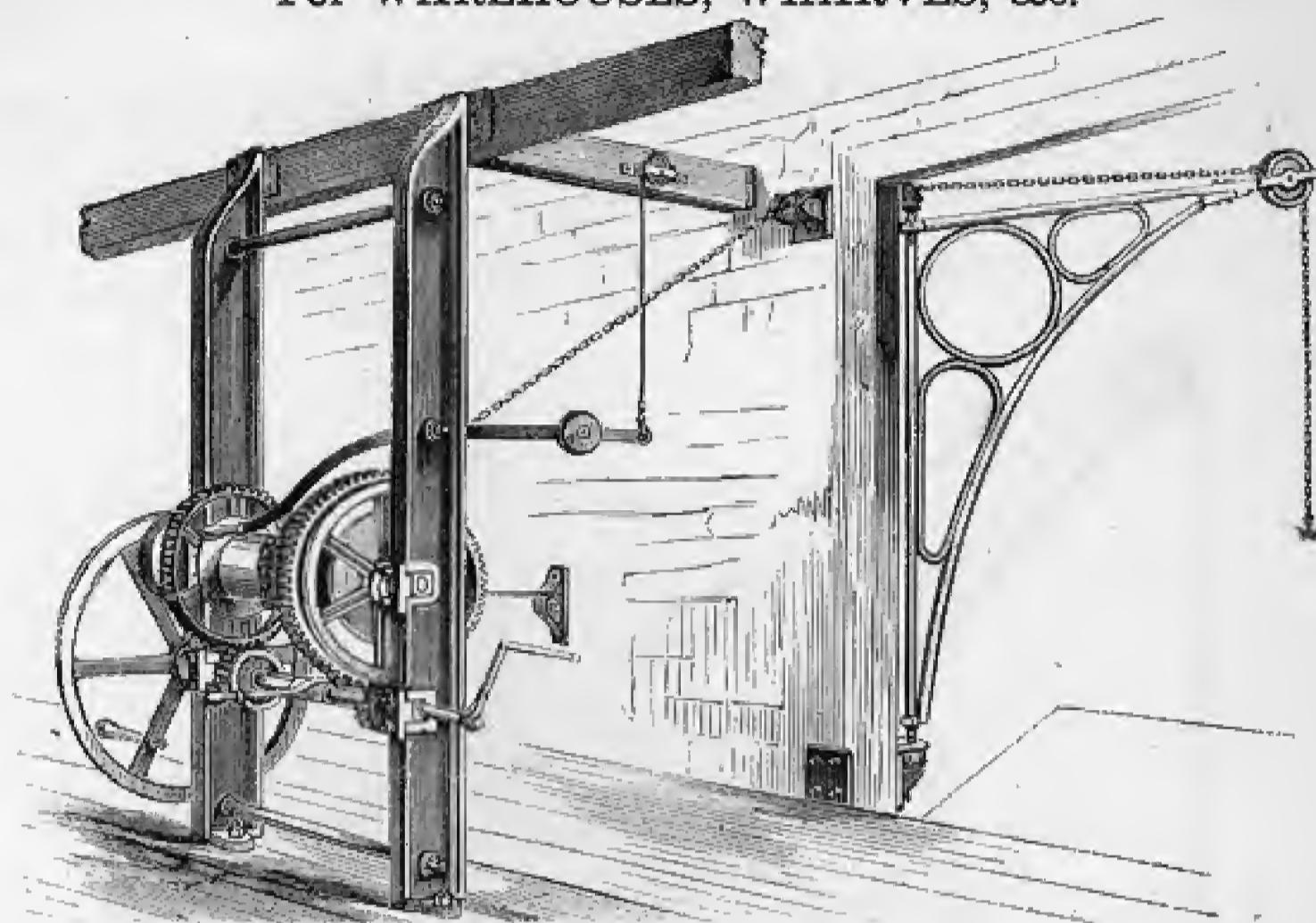
STEAM AND HAND  
LIFTS,

For Manufactories and Public  
Buildings.

Estimates given for the above, on application.

## HAND HOISTING-GEAR.

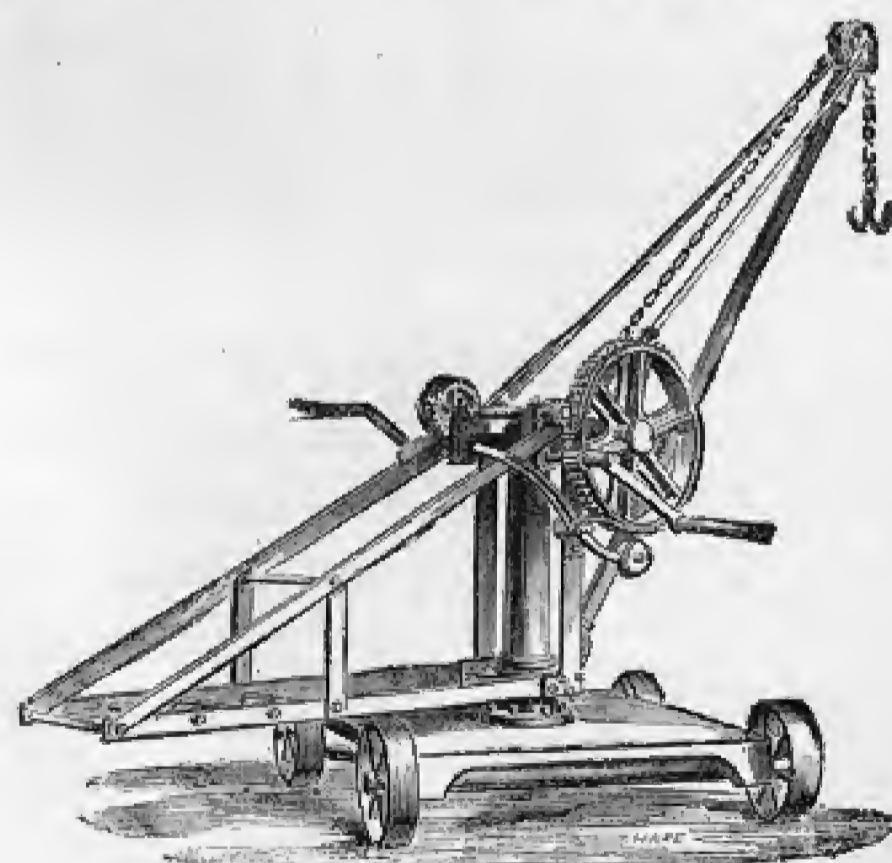
For WAREHOUSES, WHARVES, &c.



The above is fitted with Double and Single Purchase Motion, Break Wheel and Lever, 2 Winch handles, extra Wheel for quickening the speed of the up chain when the load is off, and is complete in all the arrangements for which it is adapted.

To Lift	Height of Crane,		Radius of Jib.	Price of Crane.	Price of Jib.
½-ton	.. 8 feet ..	Single Purchase .. ..	4 feet ..	£20 0	£10 0
1 "	.. 8 " ..	Single and Double Purchase ..	5 " ..	32 10	13 10
2 "	.. 8 " ..	Ditto .. ..	5 " ..	45 0	18 18

## IMPROVED PORTABLE CRANE.

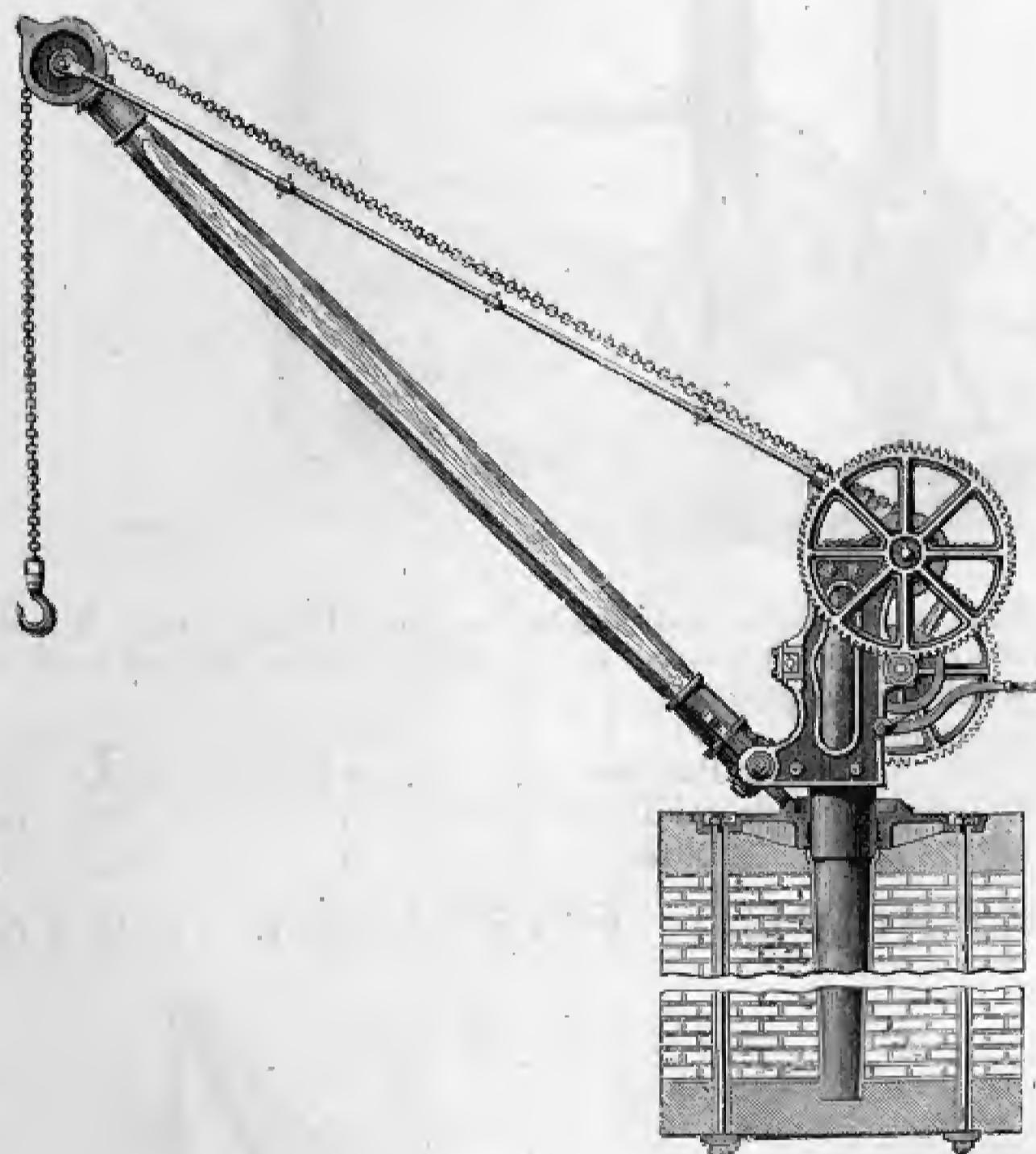


To Lift 1 ton	..	..	..	8 feet Radius	Price £35
2 "	..	..	..	10 " ..	65
3 "	..	..	..	12 " ..	75

Fitted with Double and Single Purchase Motion, Break Wheel and Lever, 2 Winch handles, strong Iron Column, and Foundation Plate, Wrought Iron Jib, Chain Hook, &c.

## WHARF CRANE.

WITH RADIATING MOTION.

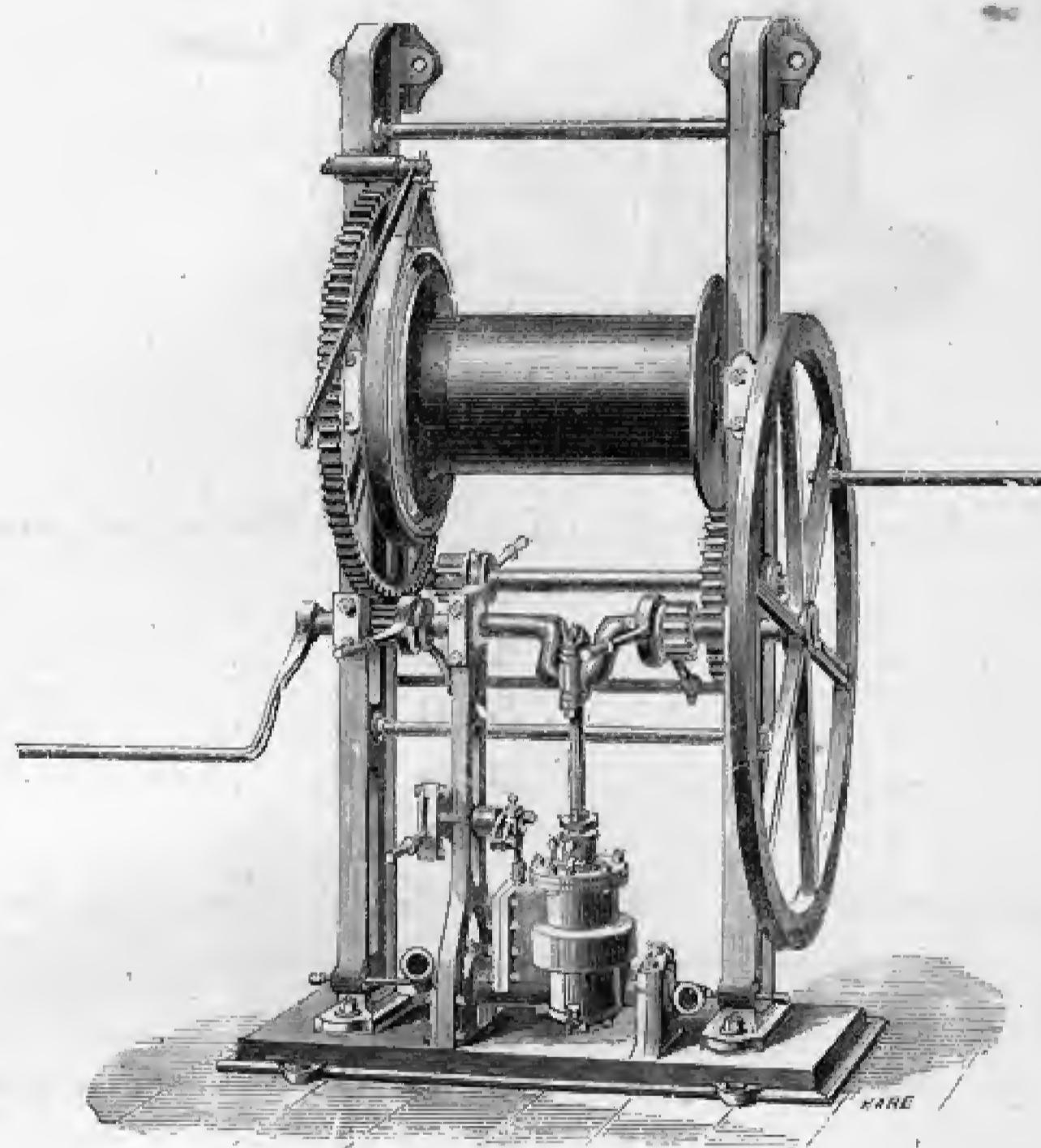


Improved Wharf Crane as shown above with Strong Metal Centre Column, Steel Head and Cap, Cast-iron Sides, Barrel keyed to Wrought-iron Shaft, turned Bearings, fitted with top and bottom Castings, End Sheave, best tested Crane Chain, with double Hook, wrought Jib Stays, single and double Purchase Gearing, Break Wheel, Break Strap, Lever and Weights, strong Foundation Plate, Bolts, &c., complete, ready for fixing.

To lift 1 Ton	..	..	8 ft. radius	..	..	Price £45
„ 2 „	..	..	10 ft. „	..	..	„ 55
„ 3 „	..	..	12 ft. „	..	..	„ 85
„ 4 „	..	..	..	..	..	„ 115

## IMPROVED WAREHOUSE CRANE,

For Steam or Hand Power.

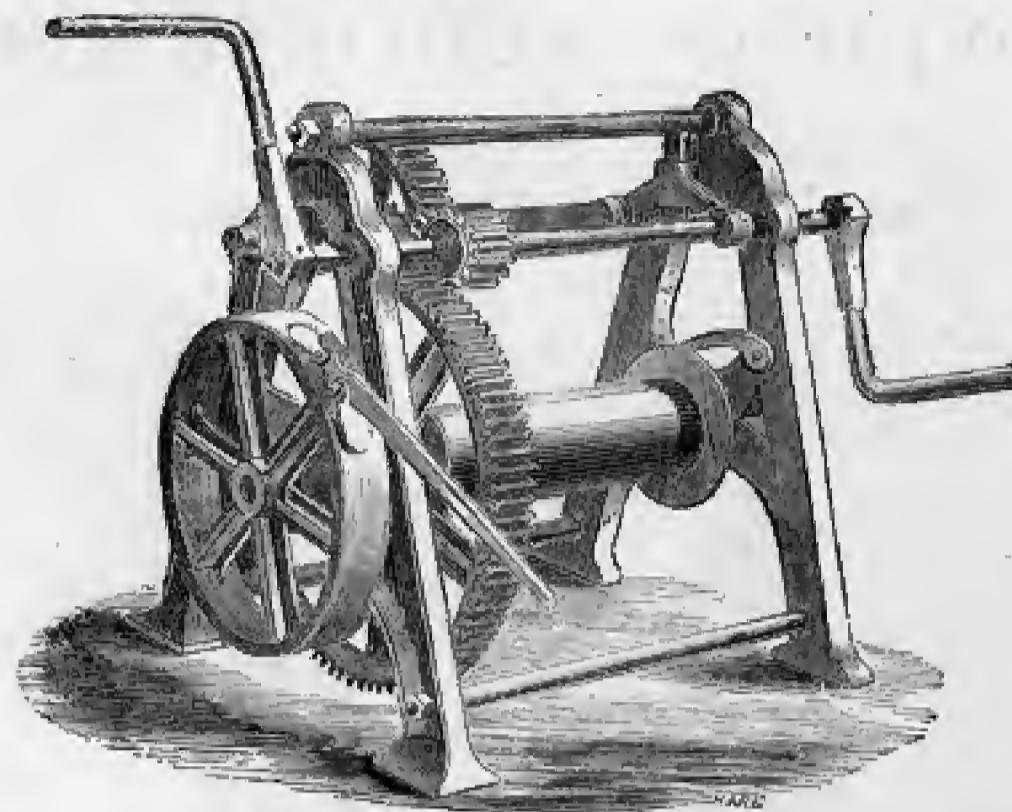


This Crane is mounted on a strong cast Base-plate, and is worked by means of a steam Cylinder. The Stays and Shafts are of wrought iron, the latter turned and working in gun-metal Bearings. The Levers are arranged so as to be immediately under the control of the man in charge, and the Piston being easy of access is readily disconnected if required. Crank Handles are supplied, so that during a suspension of steam it may be worked by hand.

To lift 40 Cwts. . . . . Price £65

Prices of other sizes on application.

## HOISTING CRABS.



## SINGLE PURCHASE.

No. 1.—To lift 1 ton...	Price, without Break...	£3 0 0	With ordinary Break	£4 2 6
„ 2 „ $1\frac{1}{2}$ „ ..	„ „ „	3 7 6	„ „ „	4 12 6
„ 3 „ 2 „ ..	„ „ „	4 5 0	„ „ „	5 10 0
„ 4 „ 3 „ ..	„ „ „	5 0 0	„ „ „	6 10 0
„ 5 „ 4 „ ..	„ „ „	6 5 0	„ „ „	7 15 0
„ 6 „ 6 „ ..	„ „ „	7 5 0	„ „ „	8 15 0

Brass Bushed, 25s. extra.

Fitted with Weston's Patent Break, 10s. extra.

## DOUBLE PURCHASE.

No. 10.—To lift 2 tons	Price, without Break	£5 5 0	With ordinary Break	£6 10 0
„ 11 „ 3 „ ..	„ „ „	6 0 0	„ „ „	7 10 0
„ 12 „ 4 „ ..	„ „ „	7 7 6	„ „ „	8 17 6
„ 13 „ 6 „ ..	„ „ „	8 5 0	„ „ „	9 17 6
„ 14 „ 8 „ ..	„ „ „	10 0 0	„ „ „	12 0 0
„ 15 „ 10 „ ..	„ „ „	13 12 0	„ „ „	15 15 0
„ 16 „ 12 „ ..	„ „ „	17 5 0	„ „ „	19 10 0
„ 17 „ 16 „ ..	„ „ „	21 0 0	„ „ „	23 10 0

Brass Bushed, 2 to 4 tons, 27s. 6d. extra. Fitted with Weston's Patent Break, 2 to 4 tons, 15s. extra.

„ 6 to 8 „	35s. 0d.	„	„	„	above 4 „	25s. „
„ 10 to 16 „	40s. 0d.	„	„	„	„	„

These weights are supposed to be lifted over 1 and 2-sheave Pulley Blocks, but fully one-third of these weights may be lifted direct from the Barrel with perfect safety.

## PILE DRIVER.



This Pile Driver is supplied complete with Guides, Plates and Cotters, 1 set of Nippers with Balance Ball, Chain Wheel and Spindle, Pillar Blocks, Brass Bearings, &c., with all the Wrought Iron Stays, Holding Down Bolts and Nuts, Bolts and Nuts for Wood Framing, 60 feet  $2 \times \frac{1}{4}$  Iron drilled and countersunk for Guides to work in, Hoisting Crab, Cast Iron Monkey, and 60 feet best tested Chain and Hook—made in various sizes.

Prices vary according to weight of Monkey required.

BEST WROUGHT IRON (LONDON PATTERN)  
PULLEY BLOCKS.

ALL MACHINE MADE



SNATCH BLOCK.

N° 2.

N° 3.

N° 4.

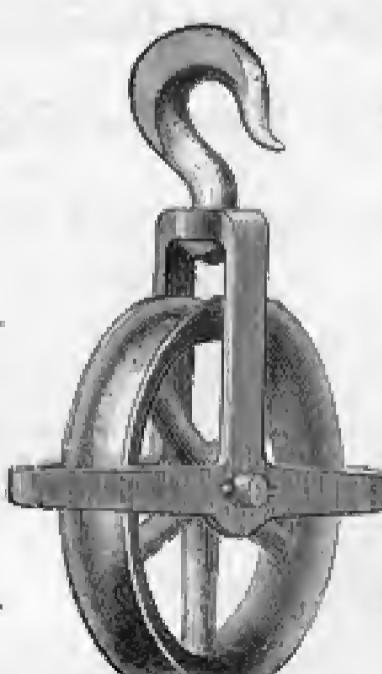
N° 5.

N° 6.

Diameter of Sheave... and Width of Groove ...	ins. 2½ × 8	ins. 3½ × 1	ins. 4 × ½	ins. 4½ × 4	ins. 5 × 1	ins. 6 × 1	ins. 7 × 1½	ins. 8 × 1½	ins. 9 × 2	ins. 10 × 2½	ins. 11 × 2½	ins. 12½ × 2½	ins. 14 × 2½	ins. 15 × 3	ins. 16 × 3½
Price of Snatch Block..	6/-	6/-	7/-	8/6	11/6	13/6	16/6	21/6	32/-	60/-	80/-	110/-	140/-	170/-	210/-
Sheave Block—No. 2 or 3	4/-	4/6	5/9	7/6	10/-	11/6	14/-	19/-	30/-	52/6	72/-	98/-	110/-	130/-	164/-
No. 4 Sheave Block ..	5/6	7/-	8/6	11/-	15/6	17/-	24/6	35/6	50/-	98/-	124/-	144/-	170/-	208/-	242/-
No. 5 Sheave Block ..	7/-	8/6	10/6	14/-	19/6	21/6	30/6	48/6	70/-	127/-	157/-	190/-	222/6	262/-	310/-
No. 6 Sheave Block ..	8/6	10/-	12/6	18/6	25/6	28/6	46/-	63/-	92/6	157/-	190/-	222/6	280/-	352/-	400/-

RUBBISH PULLEYS.

Diameter of Sheave... Width of Groove ... Price ...	3½ — 5/9	4½ — 6/8	6 — 7/-	7 1½ 7/9	8 1 8/6	9 1 9/3	10 inches. 1 inch. 10/-
Diameter of Sheave... Width of Groove ... Price ...	11 1 11/0	12 1 12/-	14 1½ 13/-	16 1½ 16/6	18 1½ 21/-	20 1½ 24/-	22 inches. 1½ 27/6



WESTON'S PATENT DIFFERENTIAL  
PULLEY BLOCKS.

UPWARDS OF 70,000 SETS HAVE BEEN SOLD.

PULLEY WITH RATCHET.

By which one man can lift the weight specified.

Tested to	Price of Blocks, per Set.	Bright BB Chain, per foot.
1 ton	53/-	9d.
1½ „	65/-	10d.
2 „	72/6	11d.
3 „	107/6	1/1



PULLEY WITH SPOCKET WHEEL.

Tested to	Price of Blocks, per Set.	Bright BB Chain, per foot.
2 tons.	80/-	11d.
3 „	115/-	1/1
4 „	140/-	1/3

PRICES AS ILLUSTRATED.

Tested to .....	5	10	12	20	30	40	60	80	cwts.
Price.....	12/6	20/-	20/-	30/-	40/-	50/-	100/-	120/-	per Set
Bright Chain .....	6d.	6d.	7d.	9d.	10d.	11d.	1/1	1/3	per ft.

Please state height required to lift when ordering.

## NEW PATENT PULLEY BLOCK.

These Pulley Blocks are the simplest and most powerful of any that are made.

Both chains take an equal share of the load lifted, thus distributing the weight, and causing the Block to hang perfectly plumb.



The weight listed cannot run down of its own accord when suspended.

A Hook can be attached to each end of the lifting chain, so that a fresh load can be raised without first lowering the chain.

To Lift.	Price of Blocks.			Price of Chain per foot, including one Hook.	
	£	s.	d.	s.	d.
10 cwt.	1	15	0	1	0
1 ton	2	10	0	1	6
1½ ,,	3	0	0	1	8
2 ,,	3	10	0	1	8
3 ,,	5	0	0	2	3
4 ,,	6	5	0	2	3
5 ,,	7	10	0	2	6
7½ ,,	12	10	0	5	0
10 ,,	17	10	0	7	6

Blocks of four tons and upwards are fitted with Spcket Wheels and Ropes, unless specially ordered with Hand Chain.

## NEW PATENT HAND HOIST.



This Block is constructed to enable one man to lift heavy weights with ease and rapidity.

It is so arranged that it can be checked without difficulty when the weight is falling.

	Price.	Hand Chain.	Lifting Chain.
No. 0. To raise 2½ cwt. ....	£1 10 0	7d. per foot	0s. 7d. per foot
„ 1. „ 5 „ .....	1 15 0	7d. „	0s. 7d. „
„ 2. „ 10 „ .....	2 10 0	7d. „	1s. 3d. „
„ 3. „ 15 „ .....	3 5 0	11d. „	1s. 8d. „
„ 4. „ 20 „ .....	4 0 0	11d. „	1s. 8d. „

If fitted with Brake, EXTRA: No. 0 and No. 1, 15s.; No. 2, 20s.; No. 3, 25s.; No. 4, 30s.

The No. 0 Hoist is strong enough to lift Five Cwt., but one man can lift from One to Two Cwt. easily, and twice as fast as with No. 1 size.

## HAYLEY'S SCREW JACKS.



Wood Case.

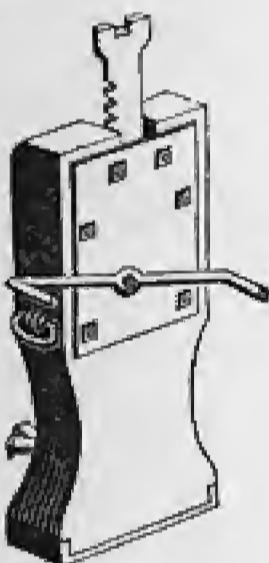
	Will run out.	Will lift	Prices.
No. 1 . . . . .	13 inches . . . . .	2 tons . . . . .	£4 10 0
" 2 . . . . .	13 " . . . . .	4 " . . . . .	5 0 0
" 3 . . . . .	13 " . . . . .	6 " . . . . .	5 15 0
" 4 . . . . .	13 " . . . . .	8 " . . . . .	7 0 0
" 5 . . . . .	13 " . . . . .	10 " . . . . .	8 0 0
" 6 . . . . .	14 " . . . . .	12 " . . . . .	9 0 0
" 7 . . . . .	14 " . . . . .	16 " . . . . .	15 0 0
" 8 . . . . .	15 " . . . . .	20 " . . . . .	18 10 0



Malleable Iron Case.

## RACK AND PINION JACK.

(Double Purchase.)

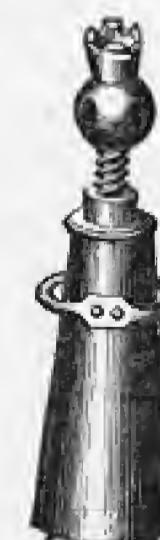


	Height when down.	Will lift	Prices.
No. 0 . . . . .	30 inches . . . . .	4 tons . . . . .	£7 10 0
" 1 . . . . .	31 " . . . . .	6 " . . . . .	8 10 0
" 2 . . . . .	33 " . . . . .	8 " . . . . .	9 10 0

TRIPOD AND BOTTLE JACKS,  
OR COTTON SCREWS.

Tripod Jack.

	Height when down.	Will lift	Prices.
No. 1 . . . . .	9 inches . . . . .	1½ tons . . . . .	£1 4 0
" 2 . . . . .	12 " . . . . .	2 " . . . . .	1 7 6
" 3 . . . . .	15 " . . . . .	3 " . . . . .	1 12 0
" 4 . . . . .	18 " . . . . .	4 " . . . . .	1 18 6
" 5 . . . . .	21 " . . . . .	5 " . . . . .	2 5 0
" 6 . . . . .	24 " . . . . .	6 " . . . . .	3 0 0
" 7 . . . . .	27 " . . . . .	8 " . . . . .	3 13 0
" 8 . . . . .	30 " . . . . .	10 " . . . . .	4 10 0
" 9 . . . . .	33 " . . . . .	12 " . . . . .	5 10 0
" 10 . . . . .	36 " . . . . .	14 " . . . . .	6 7 6
" 11 . . . . .	42 " . . . . .	16 " . . . . .	6 17 6
" 12 . . . . .	48 " . . . . .	18 " . . . . .	7 15 0



Bottle Jaok.

## IMPROVED CYLINDER CASE JACK.

With Cast Frame and Head, and Wrought Screw.

To Lift.	Height when down.	Prices.	Extra if Brass bushed.
		£ s. d.	s. d.
1½ Tons	1 ft. 0 in.	0 17 6	5 0
2 ,,"	1 ,," 3 ,,"	1 0 0	5 0
4 ,,"	1 ,," 6 ,,"	1 2 6	6 0
5 ,,"	1 ,," 9 ,,"	1 6 0	6 6
6 ,,"	2 ,," 0 ,,"	1 10 0	8 6



## TRaversing SCREW JACK.

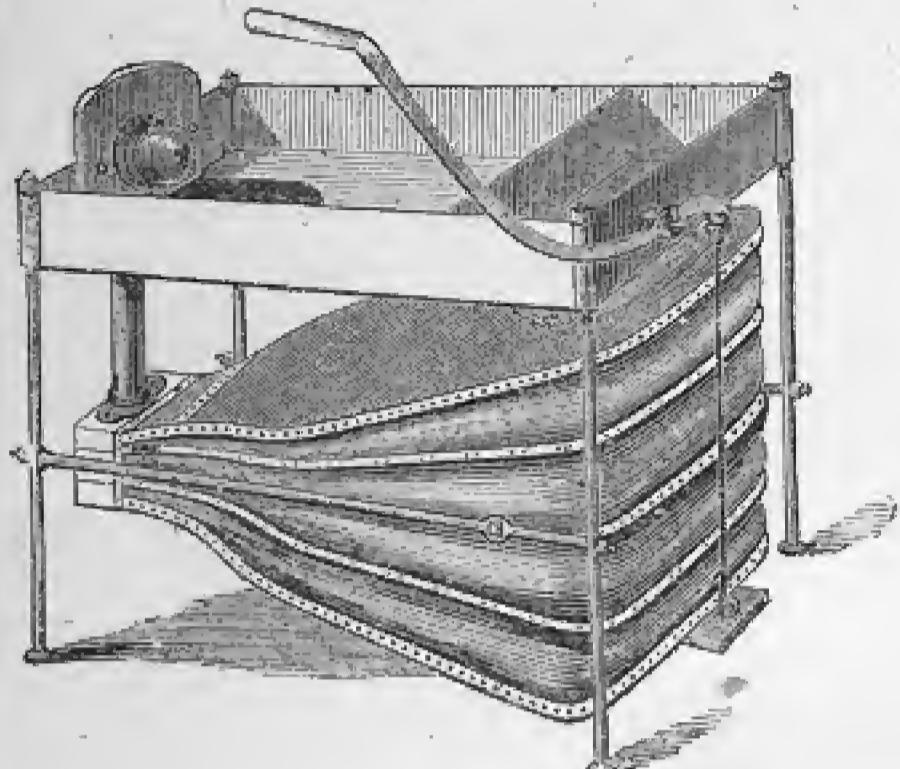
With Double Ratchet Lever to Main Screw.



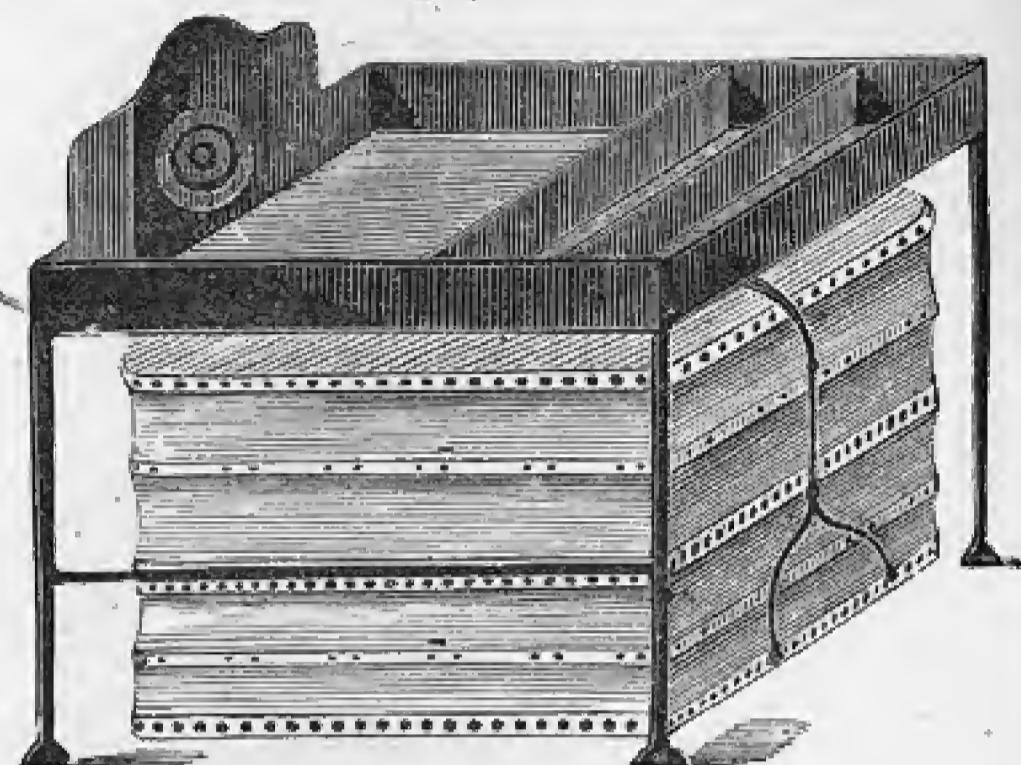
No. 1	Height when down.	Will Traverse.	Will lift.	Prices.
	20 inches	6½ inches	6 tons	£6 10 0
," 2	24 ,,"	9 ,,"	8 ,,"	7 0 0
," 3	26 ,,"	12 ,,"	12 ,,"	7 15 0
," 4	27 ,,"	16 ,,"	15 ,,"	9 15 0
," 5	27 ,,"	22 ,,"	20 ,,"	12 5 0

## PORTABLE FORGES.

No. 1.



No. 2.



No. 1. Cast Iron Portable Forge, 24×18 in. £2 16 0

" " 30×24 " 3 15 0

" " 34×27 " 6 10 0

No. 2. Wrought Iron Portable Forge, 25×18 £4 10 0

" " 30×24 5 18 0

" " 33×26 7 5 0

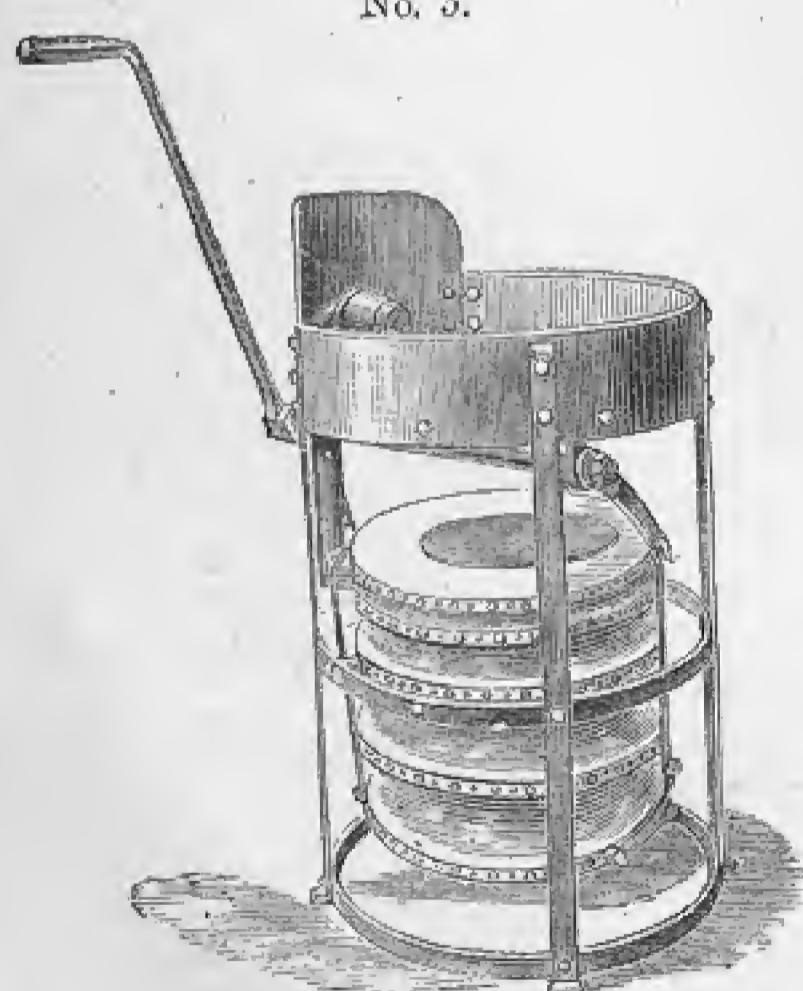
" " 36×28 8 10 0

" " 39×30 9 18 0

Can be had fitted with Wheels in front if required.

No. 3.

No. 3.—Circular Portable Forge.



With Single  
Blast Bellows. With Double  
Blast Bellows.

16 in. Bellows	4 12 0	—
18 " "	5 5 0	6 10 0
20 " "	6 6 0	7 10 0
22 " "	7 5 0	8 10 0
24 " "	8 5 0	9 18 0

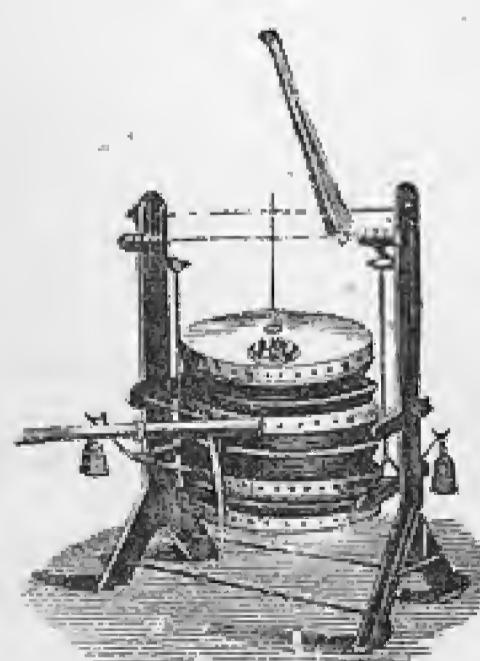
Circular Smiths'  
Bellows.

Circular Smiths' Bellows.

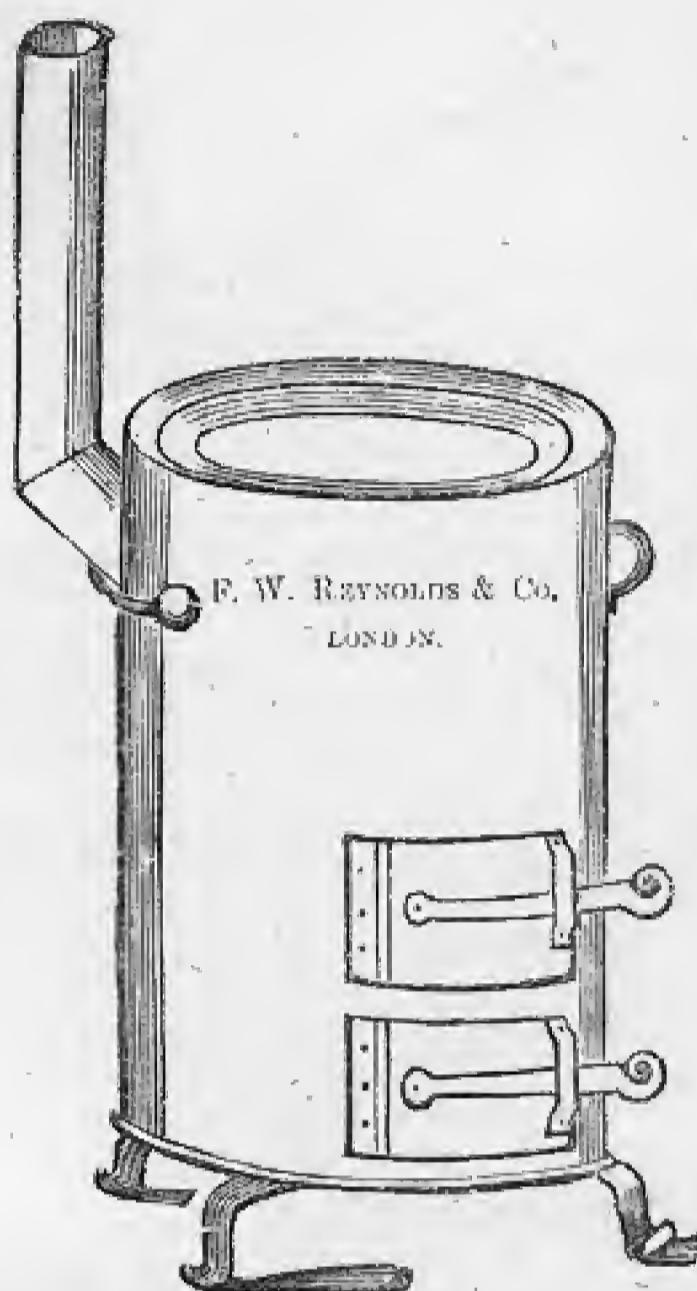
Single  
Blast Bellows. Double  
Blast Bellows.

16 in. Bellows	3 14 0	—
18 " "	4 0 0	5 15 0
20 " "	4 10 0	6 12 0
24 " "	6 0 0	8 16 0
30 " "	10 10 0	13 8 0

WEIGHTS EXTRA.



## PORTABLE WASHING COPPERS.



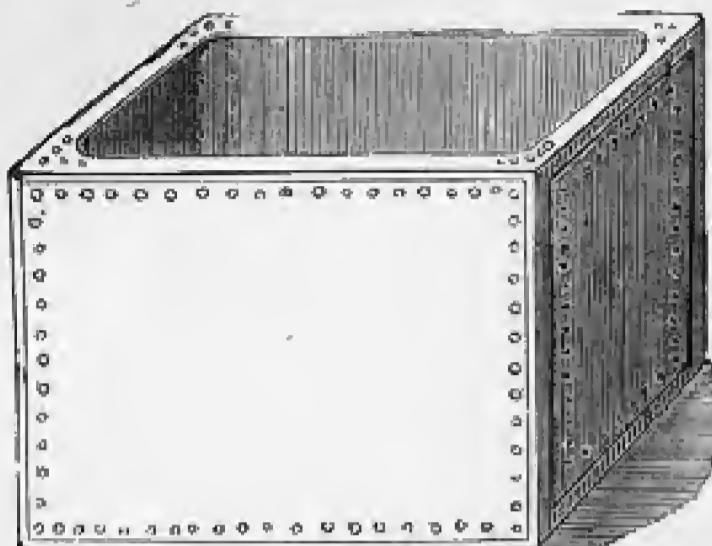
Prices including Galvanized Iron Boiler, Two feet Wrought Pipe, and Elbow.

Gallons	Price
6	25s.
8	28s.
10	32s.
12	38s.
16	44s.
20	51s.
25	60s.
30	80s.
40	95s.
50	110s.

## ASPHALTE COPPERS AND TOOLS.

Prices on application.

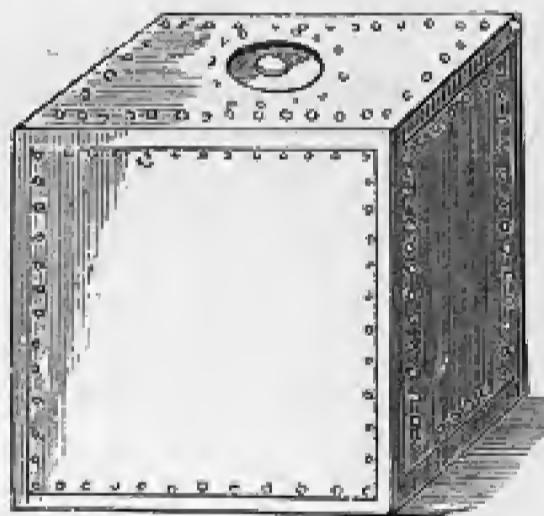
## WROUGHT IRON CISTERNS AND TANKS.



## STRONG RECTANGULAR GALVANIZED OPEN CISTERNS.

With Angle Iron round Top and Corner Plates, Galvanized after Manufacture.

Gallons.	Length.		Width.		Depth.		GALVANIZED.			PAINTED.		
	ft.	in.	ft.	in.	ft.	in.	£	s.	d.	£	s.	d.
30	2	0	2	0	1	3	1	2	0	1	1	0
40	2	0	2	0	1	7	1	6	0	1	4	0
50	2	7	2	0	1	7	1	13	0	1	10	0
80	3	0	2	2	2	0	2	6	0	2	3	0
100	3	0	2	6	2	2	2	10	0	2	6	0
150	3	7	2	10	2	5	3	13	0	2	18	0
200	4	0	3	0	2	8	4	15	0	3	10	0
250	5	0	3	0	2	8	5	15	0	4	10	0
300	6	0	3	0	2	8	6	5	0	5	0	0



## STRONG CLOSE GALVANIZED IRON TANKS,

With Man Hole and Cover, for Hot Water.

Gallons.	Length.	Width.	Depth.	Price.
30	2 0	2 0	1 6	1 15 0
50	2 0	2 0	2 0	2 12 6
80	2 6	2 6	2 1	3 17 6

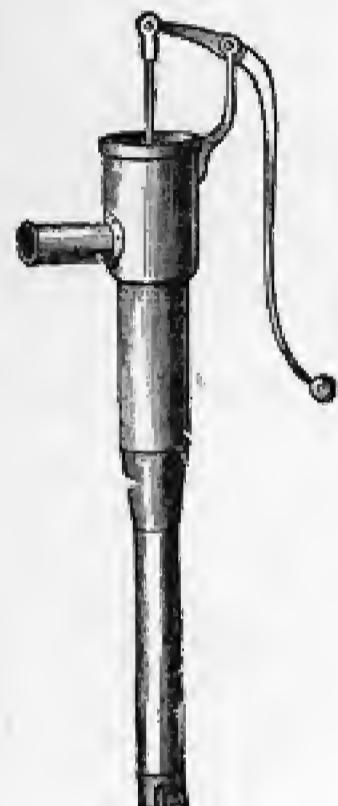
Wrought Galvanized, and Painted Iron Cisterns and Tanks made to any dimensions, and to any shape.

Special Estimates given for large Tanks, made from  $\frac{3}{16}$ ,  $\frac{1}{2}$ , and  $\frac{3}{8}$  Boiler Plate.

Water Tanks made specially to fit Yachts.

WROUGHT IRON BUILDERS' AND  
CONTRACTORS' PUMPS.

No. 1.



3 in. . . . .	Price £2 13 0	Sliding Suction Pipe,
4 „ „ „ „	3 3 0	8 feet long.
5 „ „ „ „	3 12 0	3 in. . . £2 2 0
6 „ „ „ „	4 10 0	4 „ „ „ 2 8 0
7 „ „ „ „	5 8 0	5 „ „ „ 2 14 0
8 „ „ „ „	8 5 0	6 „ „ „ 3 0 0
9 „ „ „ „	10 0 0	7 „ „ „ 3 5 0

No. 2.

Improved Lift Pump.



2½ in. . . . .	£1 5 0
3 „ „ „ „	1 16 0
3½ „ „ „ „	2 2 0

Extra for loose Union and  
tinned Cap and Lining, 7s. 6d.

No. 3.

Cast Iron Pump.



2½ in. . . . .	£2 0 0
3 „ „ „ „	2 8 0
3½ „ „ „ „	2 15 0
4 „ „ „ „	3 17 6

Iron or Lead Suction Pipe may  
be used with these Pumps.

## PLANK SIDE BUILDERS' CART.



A Strong useful Cart, with Oak Framing, Plank Sides, Tipping Sword, and Portable Side Boards, very suitable for general Farm Work, or for Builders, Contractors, &c.

No. 1—With 2½ in. Wheel Tires	..	..	..	to carry 20 cwt.	Price £	13	0	0
„ 2— „ 2½ in. do.	..	..	..	.. „ 25 „ „	14	0	0	
„ 3— „ 2¾ in. do. and Higher Wheels	..	..	..	.. „ 30 „ „	15	10	0	
„ 4— „ 4 in. do. (Round Sole) and Higher Wheels	..	..	..	.. „ 30 „ „	16	0	0	
„ 5— „ 3 in. do. .. .. .. .. „ 40 „ „	..	..	..	.. „ 40 „ „	16	10	0	
„ 6— „ 4½ in. do. .. .. .. .. „ 40 „ „	..	..	..	.. „ 40 „ „	17	10	0	

## **EXTRA STRONG BUILDERS' CART.**

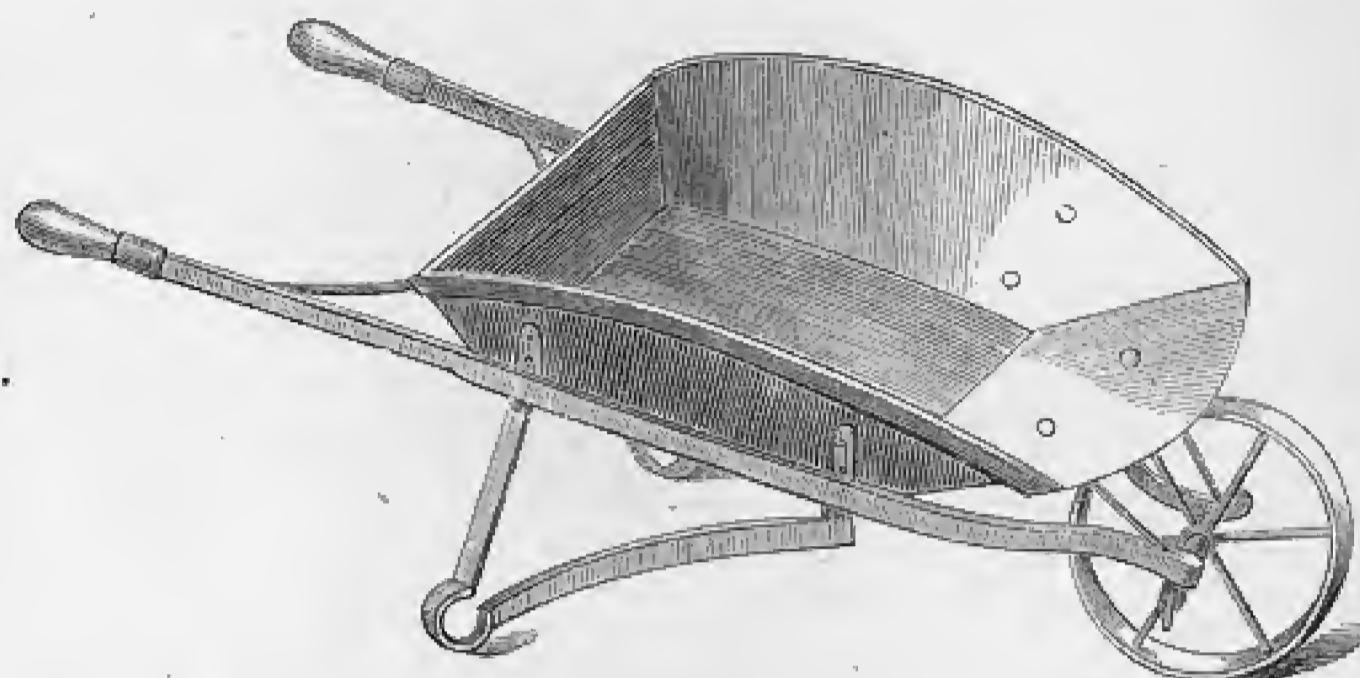
Suitable for carrying Stone, Lime, Coal, or other heavy substances, with Oak Framing, Elm Boards in  
sides and bottom, Portable Top Boards, Body made to tip.

With 2½ in. Wheel Tires, to carry 30 cwt. . . . . £18 0

4 in.      "      "      30      "      "      "      19      0

If with Springs, £3 extra.

## WROUGHT IRON WHEEL BARROW.



Price £1 15s.

Galvanized,  
12s. 6d. extra.Body only Gal-  
vanized,  
6s. 6d. extra.

## PATENT WEIGHING MACHINES.

No. 2.—STRONG PORTABLE PATENT LEVER WEIGHING MACHINE, possessing great accuracy, suitable for Warehouse and Railway Platforms, Wharves, Works, &c.

	Size of Platform.	Without Wheels.			With Wheels.		
		£	s.	d.	£	s.	d.
To weigh 3 cwt.	1 ft. 8 in. square	...	...	...	3	15	0
" 4 "	1 ft. 10 in. "	...	...	...	4	4	0
" 5 "	2 ft. 0 in. "	...	...	...	5	0	0
" 7 "	2 ft. 2 in. "	...	...	...	6	0	0
" 10 "	2 ft. 4 in. "	...	...	...	7	5	0
" 12 "	2 ft. 6 in. "	...	...	...	7	15	0
" 16 "	2 ft. 8 in. "	...	...	...	9	10	0
" 20 "	3 ft. 0 in. "	...	...	...	12	0	0

No. 3.—LEVER PLATFORM MACHINE, with Ornamental Back, for Weighing Sacks, &c.

	Size of Platform.	£ s. d.		
		£	s.	d.
To weigh 4 cwt.	1 ft. 11 in. by 1 ft. 7 in.	...	...	...
" 5 "	2 ft. 0 in. by 1 ft. 11 in.	...	...	...

No. 4.—PLATFORM WEIGHING MACHINE, with Ornamental Back and Movable Sheep Pen, similar to No. 3, but fitted with Portable Sheep Pen, which can be removed for weighing Sacks and for general purposes.

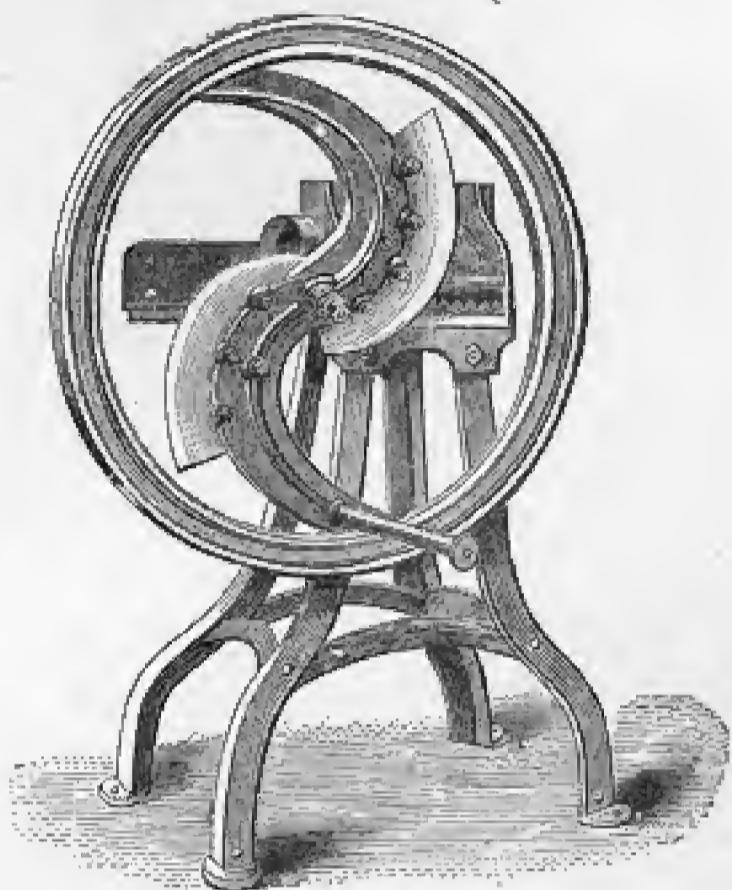
	Size of Platform.	£ s. d.		
		£	s.	d.
To weigh 4 cwt.	...	...	...	...
" 5 "	...	...	...	...

LOW PORTABLE WEIGHING MACHINE, for Sacks and general purposes.

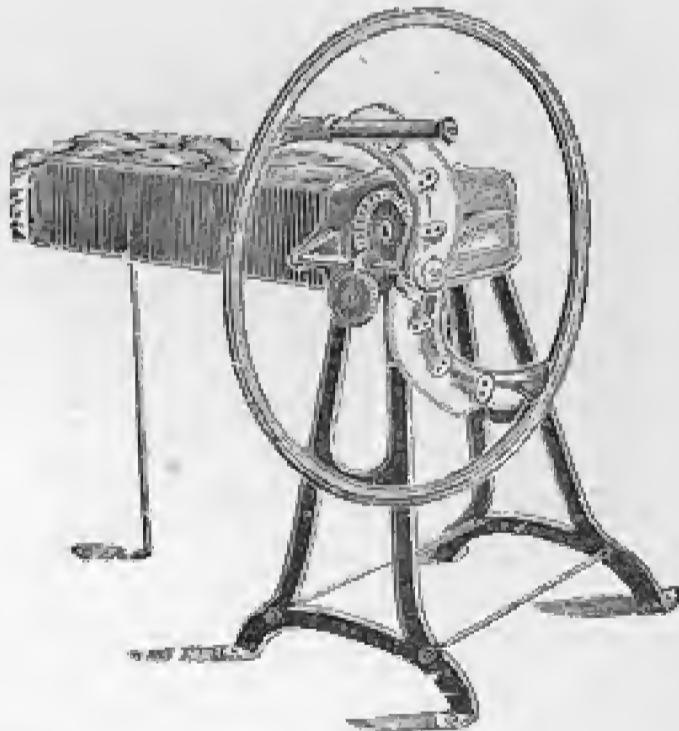
	Size of Platform.	£ s. d.		
		£	s.	d.
To weigh 3 cwt.	...	...	...	...
" 4 "	...	...	...	...
" 5 "	...	...	...	...

## CHAFF CUTTING MACHINES.

No. 0.—This Machine has a 7 in. Mouth, and is mounted on Wrought Angle Iron Legs, Price £2 7 6



**No. 1.**—As shown above, with 7in. mouth, and Improved Rollers for Feeding, mounted on a strong Wrought Iron Stand. This Chaff Cutter is recommended as the best made at anything like the price. Price £2 12 6



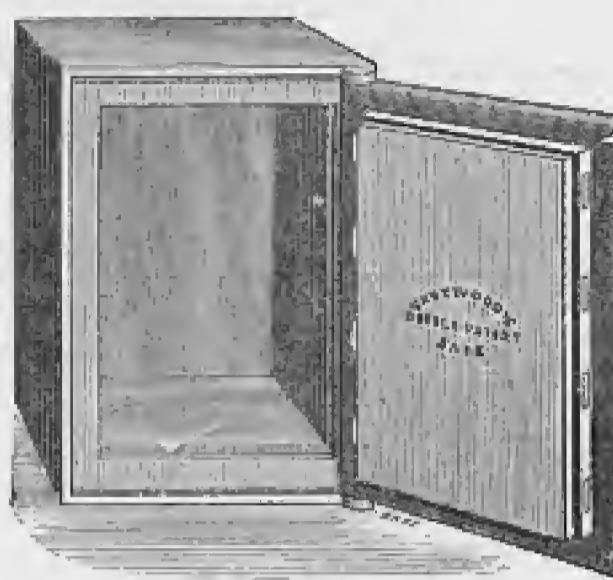
No. 2, as shown above.—Mounted on a heavy Cast Iron Frame, and fitted with Improved Case Hardened  
7 in. Mouth-piece .. .. .. .. .. Price £3 3 0

No. 3.—Mounted on a strong Wrought Iron Frame and Legs, and with 8½ in. Mouth and boxed up  
 Gearing      "      "      "      "      "      "      Price £4 7 6

## CHATWOOD'S PATENT FIRE-RESISTING SAFES.

## QUALITY 2.

These Safes are manufactured on CHATWOOD's patent principle of construction. The bodies are made of best  $\frac{1}{4}$  in. boiler plates, secured at corners by strong angle iron, and strengthened by Patent T Girder Frame. The Doors are  $\frac{1}{2}$  to  $\frac{3}{4}$  in. thick, strengthened by CHATWOOD's Patent Solid Flange Lock Case. The iron used for these doors is equal to an average of from  $\frac{1}{4}$  to  $\frac{3}{4}$  in. thick. The handle throws from three to twelve planed wrought-iron bolts, secured



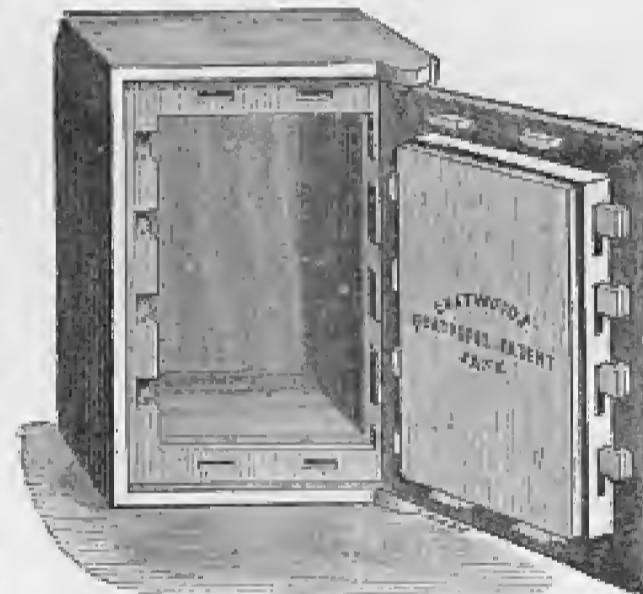
by CHATWOOD's Patent "Invincible" Unpickable, Gunpowder-proof Locks, protected by Hardened Steel Plates. The doors are secured at back by having from three to twelve planed fixed bolts, or "dogs," which, on the closing of the door, pass behind the Flange of the T Strengthening Frame.

This quality has 3 in. Fire-resisting Chambers, charged with the best Steam-generating Composition. Each lock is supplied with two keys.

SINGLE DOORS.				DOUBLE DOORS.										
	Outside Dimensions in inches.			Price, Without Drawers, etc.				Outside Dimensions in inches.			Price, with Drawers, etc.			
No.	Height.	Width.	Depth.	£	s.	d.	No.	Height.	Width.	Depth.	£	s.	d.	
00	20	14	14	8	0	0	12	30	30	24	25	0	0	
0	22	16	16	9	0	0	13	33	33	24	30	10	0	
1	24	18	18	10	0	0	14	36	36	28	33	5	0	
2	26	20	20	12	10	0	15	40	36	28	37	0	0	
3	28	22	22	15	0	0	16	48	38	28	43	10	0	
4	30	24	24	17	10	0	17	54	40	30	51	5	0	
5	33	26	24	20	0	0	18	60	48	30	61	10	0	
6	36	26	24	24	10	0	19	66	54	30	76	10	0	
7	42	26	24	26	0	0	20	72	60	30	91	10	0	
8	48	28	26	28	15	0								
9	54	30	26	32	15	0								
10	60	30	26	36	0	0								
11	60	33	28	40	0	0								

## QUALITY 4.

Manufactured on CHATWOOD's patent principle of construction. Comprising patent T Frame, Solid Flange Lock Case, Stud Bolts top and bottom, Sliding Dove-tail Claw Bolts front and back, and strongly constructed of best boiler plate  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. thick, firmly united at corners, and strengthened in front by T Girder Frame, with permanent dove-tail claws front and back to receive the sliding dovetail "Claw Bolts" of door. The wrought-iron used in the body of this Safe is equal to an average thickness of  $\frac{3}{4}$  in. throughout. The doors are formed of best boiler plate  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. thick, and are further strengthened by CHATWOOD's Patent Solid Flange Lock Case, and over the centre lock work has CHATWOOD's Patent Undrillable "Intersected" Plates, or Hardened Steel Plates, the total thickness of door being equal to  $1\frac{1}{2}$  in. The doors are moved on turned steel and iron pivots, fit truly the bored projecting lugs of T



Girder Frame, and are hardened to resist wear. The main lock work consists of an arrangement of CHATWOOD's Patent Dove-tail Sliding Claw Bolts at front and back of Safe, which, when the door is shut, pass through openings in side frames, and when thrown by the handle fall into corresponding dove-tail recesses in back of projecting blade of T Frame, thus firmly dove-tailing the door with the sides of the Safe, and rendering the whole practically a solid mass. The Patent Projecting Stud Bolts, which are fixed on the door at right angles with the sliding claw bolts of lock case, pass through openings of the top and bottom flange of T Frame when the door is closed, giving greater security against violence, and the whole of the main lock-work is secured by CHATWOOD's Patent "Invincible," Unpickable, Gunpowder-proof Locks, each of which is supplied with two keys.

SINGLE DOORS.				DOUBLE DOORS.										
	Outside Dimensions in inches.			Price, Without Drawers, etc.				Outside Dimensions in inches.			Price, with Drawers, etc.			
No.	Height.	Width.	Depth.	£	s.	d.	No.	Height.	Width.	Depth.	£	s.	d.	
1	24	18	18	24	15	0	12	30	30	24	59	5	0	
2	26	20	20	30	0	0	13	33	33	24	67	0	0	
3	28	22	22	35	15	0	14	36	36	28	81	0	0	
4	30	24	24	42	0	0	15	40	36	28	87	0	0	
5	33	26	24	47	10	0	16	48	38	28	105	5	0	
6	36	26	24	50	10	0	17	54	40	30	122	5	0	
7	42	26	24	56	15	0	18	60	48	30	149	10	0	
8	48	28	26	69	0	0	19	69	54	30	177	15	0	
9	54	30	26	79	5	0	20	72	60	30	210	10	0	
10	60	30	26	86	5	0								
11	60	33	28	95	10	0								

## OPINIONS OF THE PRESS AND TESTIMONIALS

### RESPECTING F. W. R. & CO.'S LABOUR-SAVING BUILDERS' MACHINERY.

From "THE BUILDER," May 30th, 1874.—Page 453.

Messrs. F. W. Reynolds & Co., of Southwark Street, restrict themselves (at the International Exhibition) to hand-power wood-cutting machines, such as improved patent mortising machines, mortar-mixing mills, paint mills, floor cramps, bench cramps, lifting jacks, hoisting crabs, and pulley blocks. Their Imperial Hand-power and Self-feeding Circular Saw Bench, to cut 4½ inch stuff, with a rising and falling spindle for rabbeting, extra saw and rollers, and bearings for long length stuff, will save a good deal of money. This machine is so constructed that it will cut either upwards or downwards. A groove is cut in bench table for the purpose of guiding a cross-cutting and mitring fence, with which this kind of work may be done with greater accuracy and expedition. In "The Royal" Improved Patent Mortising Machine (nearly three thousand of which have been made), the lever is directly connected, and gives motion to a wrought-iron crank, which, working in a slide attached to the spindle, alternately raises and lowers the cutting tool, instead of the cast-metal rack and pinion wheel hitherto in use, the teeth or cogs of which are liable to cause the chisel to vibrate and make the mortise irregular. It also possesses advantages in the facility given for raising and lowering the spindle for different depths of material; and in the improved means for reversing the chisel. The machine for miring, known as Shute's Patent, is a very valuable invention. It cuts edges perfectly true up to an angle of 5½ inches wide. It is stated that the first year's royalties of the working man by whom it was invented amounted to £470. In the London Hand-power Mortar-Mixing Mill, the hopper being filled with the materials, the spindle in the centre of the cylinder, having 14 blades, is set in motion by a wheel and pinion and handle, the mortar being ready for use when discharged from the machine. By the use of this Machine, one man and a boy can supply a large number of masons, and the mortar is made much better than in the ordinary way. Their Improved Patent Floor Cramps have come largely into use.

It is surprising to us that these hand-power machines are not used even more largely than they already are. Builders who can avail themselves of steam of course will not employ them, excepting at special jobs where steam cannot be applied, but there are hundreds, probably thousands, of small builders throughout the country who might adopt them with great advantage and economy.

From the "BUILDERS' WEEKLY REPORTER," May 1st, 1874.—Page 147.

In the machinery room of the International appear some excellent and well-executed articles, exhibited by Messrs. F. W. Reynolds and Co., of Southwark Street, London, S.E., calculated to be of no slight value to builders, being essentially labour-saving machines. The Imperial designed to cheapen very materially sawing, joinery, and other work where wood is required to be wrought to useful purposes. The Imperial self-feeding circular saw bench has been brought to great perfection, and is high in favour with all who have much joinery to do, as there is said to be a gain of fifty per cent. in the execution of many classes of finished work by its use, which, being self-feeding, can be rotated by any ordinary labourer, and thus the skilled mechanic and his helper may be dispensed with. This machine is set in a strong frame, and is designed to cut four-and-a-half inch stuff, and is furnished with a rising and falling spindle for rabbeting, as well as with an extra saw, rollers, and bearings for long length stuff. Tenoning and grooving may be performed as well as rabbeting by removing the shaft and making a simple re-arrangement of the machine, and in sawing, timber may be cut either upwards or downwards. The machine is not at all costly, and must be a perfect boon to builders, cabinetmakers, joiners, coach-builders, &c.

The two mortising machines which Messrs. Reynolds exhibit are also well executed and beautifully adjusted pieces of mechanism. The "Imperial" is the heavier of the two, and is rendered complete with appliances for both mortising and boring. The "Royal" is not only lighter, but simpler in construction, and is an exquisitely perfected article that may be adapted to tenoning and boring no less than mortising. The mechanical eye cannot fail to rest with genuine satisfaction on the working parts of each of these machines, and Messrs. Reynolds and Co. well deserved the silver medals that were awarded to them last year for their admirable construction.

From "THE ARCHITECT," October 25th, 1873.—Page 219.

Our attention has been called to the Catalogue of Labour-Saving Hand-Power Machinery, just issued by Messrs. F. W. Reynolds and Co., Iron Merchants, of Southwark Street. The present state of the labour market renders the employment of machinery an absolute necessity, and Messrs. F. W. Reynolds and Co. seem to be fully alive to the fact, and have made their arrangements accordingly. The mortising and sawing machines are remarkable for ingenuity of design; amongst the latter the "Imperial" Sawing Machine attracted great attention at the late meeting of the Manchester and Liverpool Agricultural Society held at Chester, and we believe it was mainly for this machine that Messrs. Reynolds were awarded the silver prize-medal. The accompanying illustration will readily show the construction of the Imperial Circular Saw Bench. It will be seen that it may be worked by hand-power, and is self-feeding. In tenoning or grooving the nut is taken off from the end of the feed shaft, and the small set screw in the wheel is released, and the shaft having been drawn out of the way, tenons may be cut by passing the timber desired to be tenoned perpendicularly to the saw, keeping the timber close to the fence. To afford greater facility for tenoning there are four holes in the fence plate, to which a piece of planed timber may be screwed, standing higher than the fence, to place the timber against while tenoning. For grooving, tenoning, or rabbeting, the saw may be raised or lowered by means of the lever and swing under the table of the bench. Two double-cog change wheels are supplied with each bench, and are used for changing the rate of the feed motion, according to the thickness of timber to be sawn. This machine is so constructed that it will cut either upwards or downwards. For cutting timber upwards instead of downwards, the small pinion has to be placed between the feed wheel with arms in it and the carrier or double-cog wheel; and when downwards the small pinion has to be taken out and the saw reversed. Whilst steam machinery cannot be used without considerable outlay, these perfect substitutes, by easy terms of purchase and low price, are brought within the reach of all. We understand that Messrs. Reynolds intend to very considerably extend their operations in the supply of hand-power machinery.

From "THE IRON," November 1st, 1873.—Page 553.

Labour-saving machinery is in few occupations needed more than amongst builders. The prevalent system of contracting and the peculiar state of the labour market, impose obligations upon employers which compel them for many reasons to seek such assistance as machines can give them. Thus there has sprung up a useful class of portable and handy contrivances calculated to increase to a great extent the productive power of a given number of men. In no branch of the building trade probably is this more the case than in carpentry and joinery. Wood is a material that lends itself so easily to the requirements of the builder, and is fabricated with so little difficulty, that it would be a wonder if this were not the case; consequently an important industry has developed in the manufacture of machinery of a kind adapted to the wants of builders, who are not slow to find out that the economy of getting work done by machine and unskilled labour is such as to repay over and over again the capital expended at commencing.

Of such machines which have recently attracted our attention are those of Messrs. F. W. Reynolds and Co., Southwark Street, which may be presumed to be of more than average merit, from the fact that they are very extensively in use, and have lately taken silver medals at the Manchester and Liverpool meeting at Chester, and at the Royal North Lancashire Agricultural Show at Chorley. Be this as it may, the work we have seen done by these implements is of a very satisfactory character, and is quite enough to recommend them to the consideration of those interested. An ingenious mitring machine, on Shute's Patent, cuts truly to the angle for which it may be adjusted, with comparatively little effort, and up to an edge of 5½ inches in length. This machine is the invention of a working man, whose first year's royalties are said to have amounted to £470. The Universal Mortising Machine is a simple and efficient contrivance for the purpose which its name indicates. In it the rack and pinion movement are discarded for a slide motion, in order to avoid the tremor which, though slight, is seemingly inseparable from the old method. A lever is directly connected, so as to give motion to a solid wrought iron crank, working in an upright slide, and alternately raising and lowering the cutting tool. The chisel is thus worked with great power, the friction is not great, and the working parts being simple are but little liable to get out of order. Of course it is arranged to be adjustable for different depths of material, admitting wood of 13 inches by 6 inches; the chisel is reversible, and has a length of stroke of 5½ inches.

The machine we have selected for illustration is that which is perhaps of greatest general utility, owing to its handiness and cheapness, namely, a self-feeding circular saw-bench. But little description is needed; it may, however, be worth while to point out that the saw is capable of doing somewhat more than merely cut up stuff. By fitting on another set of cog-wheels the rate of feed-motion may be altered so as to suit the dimensions of the timber operated on. The guide or "fence" and roller to regulate the thickness of the plank produced, as well as the lever which adjusts the feed-motion, are shown behind the fly-wheel. Rabbeting, grooving, and tenoning may be easily effected by raising or lowering the saw to the requisite extent, a lever and swing being fitted for that purpose beneath the table. Cross-cutting and mitring are also within the compass of the machine, which is thus seen to be possessed of quite as much adaptability as the hand-saw, while a very obvious and simple extension of the table affords facility for working stuff of extra length. Though this form of bench is specially intended for hand-power, it is manifestly easy to adapt it to use with steam where it is desirable.

From the "BUILDING NEWS," December 26th, 1874.

#### THE "MONARCH" MORTISING MACHINE.

Messrs. F. W. Reynolds & Co., of Southwark Street, have just introduced a new Mortising Machine, which they call the "Monarch," combining the most recent improvements with several advantages peculiar to itself. The raising and lowering of the brackets, in which the chisel-carrying spindle works, is effected by a new arrangement, holding them quite firm while working in different depths of stuff; the spindle consequently is not liable to fall suddenly, as it does in some machines, damaging the chisel. Additional power is gained by the direct action of the lever-handle, and the friction is reduced to a minimum. The machine is mounted on an extra strong stand, and will, we should think, soon come into general use among the trade. The same firm have, we understand, made several improvements in their Imperial Hand-power Saw Bench, and they have a new patent combining circular and band saw sawing-machine nearly ready for delivery.

From "THE BUILDER," December 26th, 1874.

#### REYNOLDS' NEW MORTISING MACHINE.

Messrs. F. W. Reynolds & Co. have just introduced a new mortising machine, "The Monarch," which combines the most recent improvements that have been made in this class of machinery. Special attention has been paid to the arrangements for adapting this machine to different kinds of work. It is well made throughout, and is mounted on a good solid base, which is of considerable importance to a machine of this kind. Messrs. F. W. Reynolds & Co. have another new mortising machine, "The Premier," which has a novel arrangement for shifting the bed to any required angle. This is a great desideratum for many kinds of work, and will, doubtless, be appreciated. The "Imperial Saw Bench" has been considerably improved since its first introduction, and attracted great attention at the Smithfield Club Show. A new sawing-machine is also promised, combining both a circular saw and band saw, and fitted with a new patented drag-motion.

From "THE BRITISH TRADE JOURNAL," January, 1875.

#### THE "MONARCH" MORTISING MACHINE.

The handy machine which we illustrate has lately been introduced by Messrs. F. W. Reynolds & Co., the well-known makers of wool-working machines for hand power. It embraces the most recent improvements in such appliances, is well made throughout, and mounted on a good solid base, a matter of importance in this class of machines. The raising and lowering of the brackets in which the chisel carrying spindle works is effected by a new arrangement, holding them quite firm while working in different depths of stuff; the spindle, consequently, is not liable to fall suddenly, as it does in some machines, damaging the chisel. Additional power is gained by the direct action of the lever handle, and the friction is reduced to a minimum. In the construction of this machine, special care has been exercised so as to adapt it to different kinds of work. Altogether, the "Monarch" is undoubtedly one of the most useful, and withal, one of the cheapest hand-mortising machines made.

From "THE STANDARD," May 20th, 1873.

#### THE VIENNA EXHIBITION.

A little machine for mitring, known as Shute's Patent, is one of the most perfect things in the Exhibition. It cuts edges perfectly true up to an angle of 5½ in. wide. It may not be uninteresting to state that this little machine was invented by a working man whose first year's royalties reached £470.

*The above are a few of the many notices that have from time to time been given by the Press respecting F. W. R. & Co.'s Builders' Hand Power Machinery.*

## TESTIMONIALS.

*From Mr. CHARLES WRIGHT, Builder, Beulah Hill, Norwood.*

"Respecting the General Joiner, fixed in my workshop by your firm, I have great pleasure, after twelve months' trial, in stating that it answers most satisfactorily."

"The Sawing, with its self-feeding motion and rising spindle, is very complete; and the self-feeding apparatus for planing or moulding on all four sides at one operation up to 11 by 4 is perfect, while the tenoning apparatus performs its work with efficiency and great speed. My man can cut 70 tenons of shoulders with it at one operation in fifteen minutes."

"The Band Saw is a most valuable appendage, and I should, without the slightest hesitation, say that your General Joiner is the most useful and complete combined machine a practical manufacturer of joinery could desire. It is also much stronger in every way than the General Joiners I have seen made by other makers, and I am pleased to think I took the trouble to inspect every Joiner of other makers, and more so that I afterwards decided upon yours."

*From Mr. J. MACINTOSH, Contractor to Her Majesty the Queen, and to H.R.H. the Prince of Wales, 38, Langham Street, Portland Place.*

"Your Hand Mortising Machine and Circular Saw Bench have answered admirably. I find them a very great saving, and recommend them strongly."

*From Mr. C. F. JURD, Contractor, Southsea.*

"I can speak with the utmost confidence of your Saw Bench, with rising and falling spindle, and also of the 'Universal' Mortising Machine, both of which I am perfectly satisfied with, and shall be happy to recommend as a great saving of labour."

*From Messrs. JONES & WILLIS, Temple Row House, Birmingham.*

"In reply to your favour, we beg to say that we quite approve of your Saw Bench, and intend keeping it. We find it very useful."

*From Mr. CHARLES NUNN, Builder and Contractor, Friston, Saxmundham.*

"I have much pleasure in recommending your 'Imperial' Hand power Saw Bench. It works well, and gives me the greatest satisfaction."

*From FRANCIS HAWKES, Esq., Steward to Lord Howard of Glossop.*

"I beg to enclose you cheque in payment of account of Lord Howard of Glossop, receipt of which please acknowledge. We are much pleased with the machine, which works admirably."

*From Lieut.-Col. DUGMORE (Guards' Club), Hamble, South Hants.*

"I enclose a cheque for £15 15s., the receipt of which be good enough to acknowledge. The Saw Bench I bought of you has turned out a very satisfactory and useful machine."

"I am highly pleased with it, and have recommended it to several friends."

*From Mr. THOMAS HOLLAND, Builder and Contractor, Rickmansworth.*

"The Hand-power Circular Saw Bench I had of you does its work well, and I am highly pleased with it; and the 'Royal' Mortising Machine works well, and gives me entire satisfaction."

*From Messrs. BARKER & SON, Builders and Contractors, Handsworth.*

"We beg to enclose our cheque, in payment of Hand-power Circular Saw Bench. We did not at first get into the way of properly using it, but we are now glad to tell you it is perfectly satisfactory."

*From Mr. W. HARRIS, Builder and Manufactur<sup>ing</sup> Joiner, 71, Princess Street, Edgware Road.*

"I may say that the Saw Bench and Mortising Mac<sup>great</sup> which I have had in hard work for three months, far eadly for my expectation. I am more than pleased with both."

*From Mr. A. JOHNSON, Builder, 30, Staple G<sup>t</sup> Winchester.*

"I beg to say that to-day I have proved the Circula<sup>pr</sup> Bench, and am perfectly satisfied with it."

## TESTIMONIALS (*Continued*).

*From Mr. D. MAHY, St. Sampson's Bridge, Guernsey.*

"I have received the machine quite safe, and as far as I have tried it I am fully satisfied with it." "The Mortising Machine is answering well."

*From Mr. ALFRED SMITH, Architect and Builder, Bungay.*

"Respecting the machines, I like them very much ; they give general satisfaction to all who have seen and used them."

*From Messrs. DUKE & SON, Cricket Bat and Stump Manufactory, Penshurst.*

"We received the Saw Bench all safe, and find it a very useful machine."

*From Mr. CHARLES AVELINE, Builder, Wolverton.*

"I am highly satisfied with the 'Royal' Mortising Machine you sent me. It does its work thoroughly well."

*From Mr. JAS. HARRIS, Builder, Sydenham Terrace, Bristol.*

"I am pleased to tell you that the Mortising Machine is one of the best machines I ever used or saw ; in fact I think it is First Class, especially the Crank action."

*From Messrs. PUZEY & FILEWOOD, Builders, Alton, Hants.*

"We have received the Mortising Machine quite safe, and like the first, which answers exceedingly well, we find this quite equal, and are perfectly satisfied with both."

*From Mr. GEORGE WILTSHIRE, Builder, Swindon.*

"Your 'Royal' Mortising Machine, which I purchased nearly two years ago, has given perfect satisfaction, and I shall be happy to show it to any one in this neighbourhood."

*From Mr. T. M. HOBSON, Cabinet Maker and Upholsterer, Darlington.*

"I have pleasure in handing you cheque for Mortising Machine, which I think will answer all it professes. . . ."

*From Messrs. PARKER & SMITH, Patent Pianoforte Manufactory, Plymouth.*

"The Circular Saw Bench, which you sent us three months since, answers remarkably well. We find that a man can cut pine up to 4½ inches deep ; while, for grooving and rebating, of which we have a great deal to do in pianoforte work, it is invaluable. The swinging of the fence is also very convenient for bevel sawing. We shall have much pleasure in showing it at work to any one who will call at our factory."

REFERENCES GIVEN TO BUILDERS AND CONTRACTORS THROUGHOUT THE WORLD.



# INDEX.

	PAGE	PAGE	
Preface .. . . .	3 and 4	Horizontal Steam Engine .. . .	42
Terms .. . . .	5	Vertical Boiler .. . .	43
"The Eureka" Sawing Machine	6 and 7	Stone Sawing Machine .. . .	44
"The Imperial" , , ,	8 and 9	, Rubbing or Polishing Machine .. . .	44
"The Archimedean" , , ,	10	Mortar or Loam Mill .. . .	45
"The Royal" , , ,	11	Mortar Mixing Mill .. . .	46
Circular Sawing Machine, for Steam Power ..	12	, Tempering Mill .. . .	47
" " " " "	13	Builders' Screens .. . .	49
Endless Band Saw Machine .. . .	14	Paint Grinding and Mixing Mills ..	50 and 51
Shafting, Pulleys, Brackets, Plummer Blocks, &c. .. . . .	15	Mounted Grindstones .. . .	52 and 53
Saws, Circular and Band .. . . .	15	Pedomotive Grindstones .. . .	54
"The Universal" Mortising Machine	16 and 17	"The Ixion" , , ,	55
"The Imperial" Mortising and Boring Machine .. . . .	18 and 19	Tire Bending Machine .. . .	56
"The Royal" Mortising, Tenoning, and Boring Machine .. . . .	20 and 21	Lever Punching Bear .. . .	57
"The Premier" Mortising, Tenoning, and Boring Machine .. . .	22 and 23	Warehouse Lift .. . .	58
"The Monarch" Patent Mortising Machine .. . . .	24 and 25	Warehouse Crane .. . .	59 and 61
Patent Mitreing Machine .. . . .	26	Portable .. . .	59
Joiner's Bench Cramps .. . . .	27	Wharf .. . .	60
Joiner's Bench Stop .. . . .	27	Hoisting Crabs .. . .	62
Imperial Patent Floor Cramp .. . . .	28	Pile Driver .. . .	63
Box Floor Cramp .. . . .	28	Pulley Blocks .. . .	64
Lever Floor Cramp .. . . .	29	" " .. . .	66
Venetian Blind Lath Punching Machine .. . .	30	Weston's Differential Pulley Blocks ..	65
Pulley Head Mortising Machine .. . .	30	Hand Hoist .. . .	67
Slate Holing Machine .. . . .	31	Lifting Jacks .. . .	68
Double Slate Holing Machine .. . . .	31	" .. . .	69
Pillar Drilling Machine .. . . .	32	Portable Forges .. . .	70
Bench Drilling Machine .. . . .	33	" Bellows .. . .	70
Angular Drilling Machine .. . . .	34	" Coppers .. . .	71
Boring Machines .. . . .	35	Wrought Iron Cisterns and Tanks ..	72
General Joiner .. . . .	36 and 37	Pumps .. . .	73
Horizontal Steam Engine .. . . .	38	Builders' Carts .. . .	74
Vertical Steam Engine and Boiler .. . . .	39	" Barrows .. . .	75
Horizontal Steam Engine .. . .	40 and 41	Weighing Machines .. . .	75

## INDEX.

	PAGE	PAGE
Preface .. . . .	3 and 4	42
Terms .. . . .	.. 5	43
"The Eureka" Sawing Machine	6 and 7	44
"The Imperial" , ,	8 and 9	44
"The Archimedean" , ,	.. 10	45
"The Royal" , ,	.. 11	46
Circular Sawing Machine, for Steam Power ..	12	47
"      "      "      "	.. 13	49
Endless Band Saw Machine .. . .	14	50 and 51
Shafting, Pulleys, Brackets, Plummer Blocks, &c. .. . . .	.. 15	52 and 53
Saws, Circular and Band .. . . .	15	54
"The Universal" Mortising Machine	16 and 17	55
"The Imperial" Mortising and Boring Machine .. . . .	18 and 19	56
"The Royal" Mortising, Tenoning, and Boring Machine .. . . .	20 and 21	57
"The Premier" Mortising, Tenoning, and Boring Machine .. . .	22 and 23	58
"The Monarch" Patent Mortising Machine .. . . .	24 and 25	59 and 61
Patent Mitreing Machine .. . . .	26	59
Joiner's Bench Cramps .. . . .	27	60
Joiner's Bench Stop .. . . .	27	62
Imperial Patent Floor Cramp .. . . .	28	63
Box Floor Cramp .. . . .	28	64
Lever Floor Cramp .. . . .	29	66
Venetian Blind Lath Punching Machine .. . .	30	65
Pulley Head Mortising Machine .. . . .	30	67
Slate Holing Machine .. . . .	31	68
Double Slate Holing Machine .. . . .	31	69
Pillar Drilling Machine .. . . .	32	70
Bench Drilling Machine .. . . .	33	70
Angular Drilling Machine .. . . .	34	71
Boring Machines .. . . .	35	72
General Joiner .. . . .	36 and 37	73
Horizontal Steam Engine .. . . .	38	74
Vertical Steam Engine and Boiler .. . . .	39	75
Horizontal Steam Engine .. . . .	40 and 41	75
Horizontal Steam Engine .. . . .	..	76
Vertical Boiler .. . . .	..	77
Stone Sawing Machine .. . . .	..	78 and 71
"      "      "      " Rubbing or Polishing Machine .. . . .	..	80 and 81
Mortar or Loam Mill .. . . .	..	
Mortar Mixing Mill .. . . .	..	
"      "      " Tempering Mill .. . . .	..	
Builders' Screens .. . . .	..	
Paint Grinding and Mixing Mills .. . . .	..	
Mounted Grindstones .. . . .	..	
Pedomotive Grindstones .. . . .	..	
"The Ixion" , , .. . .	..	
Tire Bending Machine .. . . .	..	
Lever Punching Bear .. . . .	..	
Warehouse Lift .. . . .	..	
Warehouse Crane .. . . .	..	
Portable , .. . .	..	
Wharf , .. . .	..	
Hoisting Crabs .. . . .	..	
Pile Driver .. . . .	..	
Pulley Blocks .. . . .	..	
"      " .. . .	..	
Weston's Differential Pulley Blocks .. . . .	..	
Hand Hoist .. . . .	..	
Lifting Jacks .. . . .	..	
" .. . .	..	
Portable Forges .. . . .	..	
" Bellows .. . . .	..	
" Coppers .. . . .	..	
Wrought Iron Cisterns and Tanks .. . . .	..	
Pumps .. . . .	..	
Builders' Carts .. . . .	..	
" Barrows .. . . .	..	
Weighing Machines .. . . .	..	
Chaff Cutters .. . . .	..	
Safes .. . . .	..	
Opinions of the Press .. . . .	..	
Testimonials .. . . .	..	

1870

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PRINTED BY WATSON & HAZELL, 28, CHARLES STREET, HATTON GARDEN.